BREASTFEEDING PRACTICES OF MOTHER'S OF CHILDREN LESS THAN 2 YEARS AND ITS RELATION TO SOCIOECONOMIC STATUS AND NUTRITIONAL STATUS OF MOTHER

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TIRUCHIRAPPALLI

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

CHENNAI, INDIA

APRIL 2013

CERTIFICATE

This is to certify that the dissertation entitled **"BREASTFEEDING PRACTICES OF MOTHER'S OF CHILDREN LESS THAN 2 YEARS AND ITS RELATION TO SOCIOECONOMIC STATUS AND NUTRITIONAL STATUS OF MOTHER"** is the bonafide original work of **Dr.S.BRINDA** in partial fulfillment of the requirements for M.D. Degree Branch-VII (Paediatrics) Examination of the Tamil Nadu Dr. M.G.R. Medical University to be held in April 2013.

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I **Dr.S.BRINDA** solemnly declare that dissertation titled, **"BREASTFEEDING PRACTICES OF MOTHER'S OF CHILDREN LESS THAN 2 YEARS AND ITS RELATION TO SOCIOECONOMIC STATUS AND NUTRITIONAL STATUS OF MOTHER"** is a bonafide work done by me at K.A.P.V. Government Medical College, during 2011-2013 under the guidance and supervision of my Chief **Prof. Dr. D. SAMINATHAN, M.D.,D.C.H** Professor & Head of the department of Paediatrics.

The dissertation is submitted to the Tamilnadu Dr. M.G.R. Medical University, towards the partial fulfillment of requirement for the award of M.D. Degree (Branch – VII) in Paediatrics.

Place: Trichy

Date : **Dr.S.BRINDA**

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This is to certify that the project work titled **"Breast feeding practices among Anganwadi mothers in relation to their socioeconomic and nutritional status "** proposed by Dr.S.Brinda of K.A.P.V. Govt.medical college, Tiruchy as part of fulfillment of M.D course in the subject of Padiatrics for the year 2012-13 by The Tamilnadu Dr.MGR medical university has been cleared by the ethical committee.

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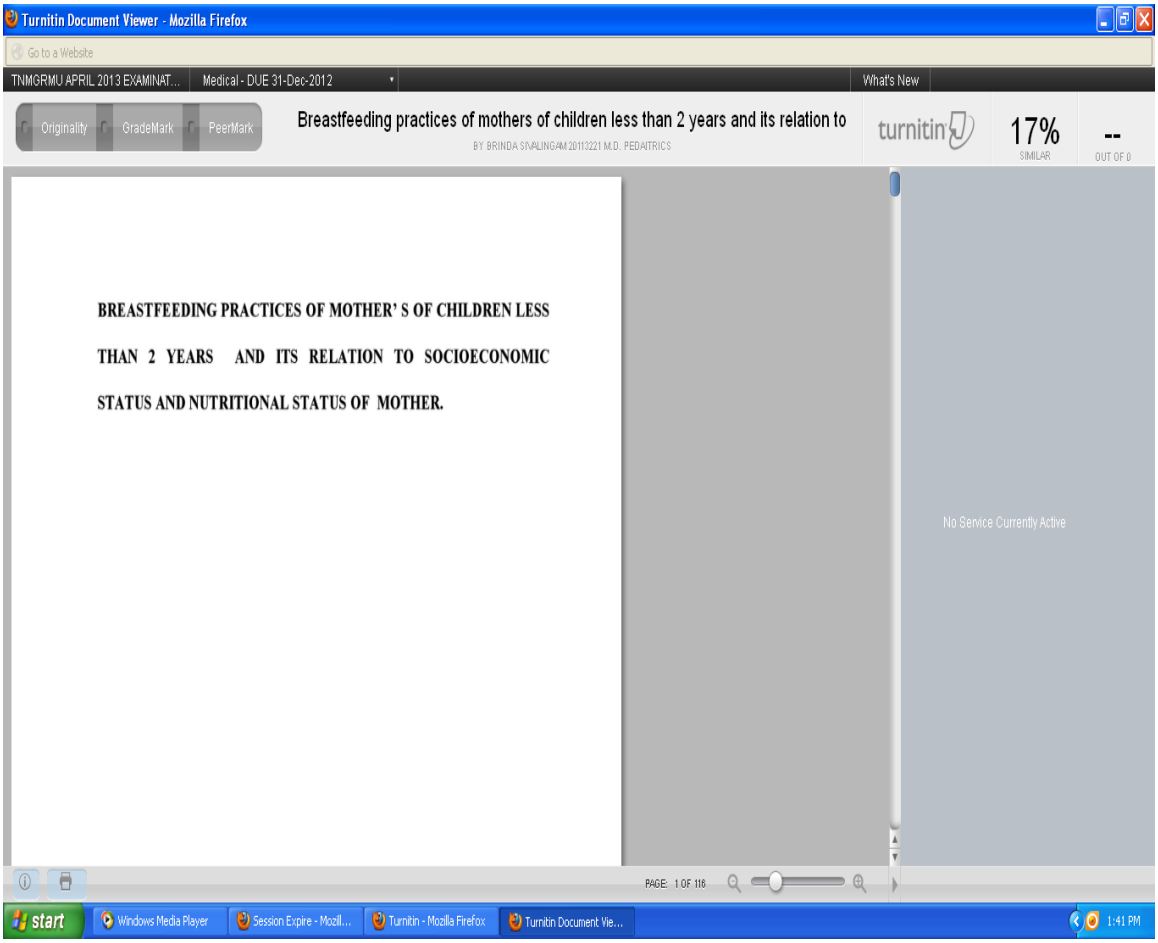
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DR. S.BRINDA

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BREASTFEEDING PRACTICES OF MOTHER'S OF CHILDREN LESS THAN 2 YEARS AND ITS RELATION TO SOCIOECONOMIC STATUS AND NUTRITIONAL STATUS OF MOTHER.

1. INTRODUCTION

Breastmilk is a “LIVE” fluid. It contains all the nutritional requirements and anti-infective properties. No other sophisticated formulae can replace breastmilk. Every medical personnel advice breastmilk as the only way of feeding an infant. Human milk satisfies all the nutritional demands of an infant for the first 6 months of life. It is easily digestible and promotes skin to skin contact which strengthens emotional bond between mother and baby. Colustrum in long term prevents atherosclerosis, hypertension, obesity, allergy and facilitates immunity. In India with low income and poor education the need for breastfeeding becomes even more important and in fact it is the only way of giving a child a good chance of survival.

WHO along with UNICEF recommends exclusive breastfeeding upto 6 months of age and continued breastfeeding with complementary feeds until 2 years of age (WHO Geneva 2001). Hence the Government of India incorporated The Infant and Young Child feeding guidelines in IMNCI. The Government of India has also included goals to decrease Infant mortality rate and Malnutrition. Its aim is to increase rate of initiation of breastfeeding

with in 1 hr from existing 15.8 % to 50 % and also to increase exclusive breastfeeding rate in the first 6 months from the existing level of around 41% to 80% as stated by Apurba Sinhababu and Dipta et al in their study.

Optimal Infant and child feeding practices are essential for survival of infants and young children. If optimal IYCF practices are provided, one fifth of under five mortality can be prevented. Suboptimal IYCF feeding practices leads to poor growth, poor cognition and infectious diseases like diarrhoea and pneumonia especially in our country like India as stated by Tanmay K Panja and Nirmal K Mandal et al in their study at West Bengal, India.Breastfeeding practices is influenced by a number of social, cultural and economic factors in a study done at rural population at North India and also by Bass and Groer 1997,Goksen et al 2002 and Li et al 2002. Eventhough there are many means to promote, protect and support breastfeeding as optimal way of feeding, there are disparities between what is recommended and what is being practiced.

Therefore in order to promote breastfeeding, authorities are called for promoting breastfeeding as a key strategy to decrease the burden of undernutrition, stunting and prevent lifestyle diseases in adulthood. Behaviour change communication through trained women for breastfeeding

support would promote breastfeeding and allay myths. Intersectoral planning between the ministries of Health and Family Welfare, Women and Child Development and Food and Nutrition Department, is essential to promote breastfeeding along with ground level activities by Anganwadi workers.

2. STUDY JUSTIFICATION

Breastfeeding is the fundamental right of a child and is the effective way to give a baby a complete protective food. The initiation of breastfeeding and the timely introduction of safe and appropriate complementary food in conjunction with continued breastfeeding is of utmost importance for the growth and development and nutritional benefits of a child. Though the prevalence of breastfeeding is high, there are still undesirable local traditional practices which delay administration of breastmilk and rejection of colustrum.

Recognizing the benefits of breastfeeding, The Government of India along with WHO and UNICEF also recommends exclusive breastfeeding for the first 6 months and continued feeding along with complementary food until 2 years of age .

Hence this study was conducted to correlate the breastfeeding practices of mother ‘s of children less than 2 years and its correlation to nutritional status of mother and socioeconomic status of the family and the various demographic factors which influence breastfeeding practices in sub-urban Anganwadi’s of Trichy city, Tamilnadu.

3. AIM OF THE STUDY

1. To study the various demographic factors affecting breastfeeding practices of mother's of children less than 2 years.
2. To correlate the breastfeeding practices of mother's in relation to their socioeconomic status and nutritional status.
3. To find out the nutritional status outcome of children who were exclusively breastfed and nutritional status of children who were not exclusively breastfed.

4. REVIEW OF LITERATURE

Breastfeeding has got extensive benefits, because of its benefits the World Health Organisation along with UNICEF has recommend exclusive breastfeeding for the first six months and continue breastfeeding along with complementary foods upto 2 years of age. Many demographic factors along with nutritional status of mother and the socioeconomic status of the family seem to affect the breastfeeding practices.

ADVANTAGES OF BREASTFEEDING

Many studies including IAP reports 1997, have shown that breastfeeding has immunological, psychological and nutritional benefits for the infant in addition to maternal and economic benefits.

ADVANTAGES FOR THE INFANT

Neurodevelopmental benefits: Numerous studies have shown that breastfeeding is associated with positive effects on neuronal development due to the presence of long chain polyunsaturated fatty acids in breast milk. Breast milk has higher concentration of eicosapentanoeic acid and docosahexanoeic acid which is responsible for advanced neuronal development. Heinig and Dewey studies in 1996 have shown that breastmilk contains higher erythrocyte concentration of DHA and

therefore better visual function in fullterm breastfed infants compared to formula-fed infants. In a study done by Picciano 2001 breastmilk has lower concentration of aminoacids like methonine, phenylalanine and thyrosine and higher concentration of cystine and taurine. This prevents CNS damage and promotes neuronal development.

NUTRITIONAL ADVANTAGES

As stated by The American Academy of Pediatrics (AAP Reports 1997,p1035) , "the breastfed infant is the reference or normative model against which all alternative feeding methods must be measured with regard to growth and development, health and other short and long term outcomes" . Human milk is ideal for infant growth and development. The composition of breastmilk changes throughout the lactation period. It is ideal for each infant's requirement.

As proven by Dewey study 2000, It has an appropriate balance of all nutrients and it is easily digested and bioavailable. American Dietetic Association states that, breastmilk contains enzymes such as lipoprotein and pancreatic lipase, and amylase, which aids in digestion. Breastmilk also provides fat and water-soluble vitamins. Study by Cahill and Wagner, 2002b says that minerals contained in breastmilk are more bioavailable and

in appropriate quantities for the baby. This was also supported by ADA Report in 1997. Dewey studies in 2001 have shown that EBF for six months provides adequate nutrition for normal growth of the infant up to six months. ADA Reports 2001 said that relatively low content of protein and sodium in human milk places less load on the immature kidney. Regarding protein, human milk contains a high ratio of whey to casein, which is easily digestible. Nonlactose carbohydrate plays an important role in an infant's ability to resist infections. Fatty acids are essential for brain development. Studies have shown that breastfed infants gain weight rapidly during the first 2-3 months, followed by a relatively slower growth rate compared to formula-fed infants. Dewey 2001 and Eckhardt et al 2001 have shown that breastfed infants "self regulate their energy requirement" by maintaining low body temperature and by decreasing metabolic rate than formula-fed infants.

IMMUNOLOGICAL ADVANTAGES

A dose-response relationship exists between duration of breastfeeding and an infant's immune response. In a study done by Scariati et al 1997, the more breastmilk that an infant receives during the first six months, the less likely is to develop health problems. Oddy et al 2001 states that breastfeeding protects against infections through secretory immunoglobulin A (IgA), lactoferrin, lysozyme, cytokines, nucleotides, anti-inflammatory factors, macrophages and lymphocytes. Hence it was concluded in Heinig and Dewey,1996 study that human milk enhances the infant's immune system. Liepke et al ., 2002 and Wright et al., 1998 have shown that exclusively breastfed infants have fewer gastrointestinal infections due to the "bifidogenic activity" of milk protein. Heinig and Dewey studies in 1996 confirmed that breastfeeding protects infants against infectious diseases like bacteraemia, meningitis, urinary tract infections and infant botulism. Same study showed that breastfeeding also protects against chronic illnesses like insulin-dependant diabetes mellitus, Crohns and ulcerative colitis, lymphoma and sudden infant death syndrome .

ADVANTAGES FOR THE MOTHER

Apart from numerous health and nutritional benefits for the infant Cahill and Wagner study in 2002a, states that breastfeeding has got lots of benefit to the mother too. Breastfeeding reduces postpartum bleeding. AAP Reports 1997 ; Heinig and Dewey 1997 states that it helps in rapid uterine involution. Newcomb et al 1994; Simmons 1997 study have shown that it also reduces the risk of breast cancer and Type 2 diabetes mellitus in life. Heinig and Dewey 1997 study showed that a women lactating at six weeks postpartum had lower fasting glucose levels and improved glucose metabolism when compared to non lactating women. Mothers who breastfeed have increased fractional absorption of calcium compared to non lactating women. Kalkwarf, 1996 in his study have shown that lactating mothers have reduced incidence of osteoporosis, reduced incidence of hip fractures as told in AAP Reports, 1997 and reduced risk of ovarian cancer as shown by Rosenblatt and Thomas et al in 1993. A separate study by Janney et al .,1997 revealed that formula-fed women retain more body weight compared to women who breastfed their infants.

ECONOMICAL ADVANTAGES

According to Ball and Wright, 1999 and Pugh et al 2002 study breastfeeding is more convenient and less costly compared to formula and health care costs. This is more apparent in developing countries, as published in ADA Reports 2001, where the major part of family's income is spent on buying food for older children and adults .

FACTORS INFLUENCING BREASTFEEDING

Premature discontinuation of breastfeeding is complex and is influenced by a number of factors. In a study done by Bass and Groer 1997; Goksen 2002 Scott and Binns, 1999 it was found that many demographic factors such as maternal age, education, occupation, pregnancy desirability, socioeconomic and cultural factors, parity, number of children at home, and social support have been shown to influence a women's decisions to breastfeed. In a study by Corbett-Dick and Bezek, 1997; Cropley and Herwehe, 2002 et al found that maternal employment, inadequate support by health professionals in maternity hospitals and clinics, inadequate prenatal and postnatal breastfeeding education, and negative attitudes of mothers toward breastfeeding as well as lack of support are barriers to initiating and sustaining breastfeeding .

MATERNAL CHARACTERISTICS

Maternal age

Many studies have found that older mother breastfeeds for a longer duration than a younger mother because older mothers are more likely to have more experience and know about the benefits of breastfeeding. In Nepal in 1986 it was found that younger mother breastfeed for shorter duration in a study by Thuladar. This was also found in a study at Bangladesh which revealed positive association between mothers age and duration of breastfeeding which was stated in 1989 Bangladesh Fertility Survey. However Tu et al in his study at China in 1990 showed that age of mother had no independent impact on duration of breastfeeding. It differs in different societies. But however it is an important factor to influence breastfeeding practices.

Educational Status of Mother

Maternal education is considered to be one of the highest predictor of breastfeeding. In a study by Kalra et al in 1982 and Mannan and Islam in1995 from India and Bangladesh they showed that well educated women breastfeed for a shorter duration. They also showed that the average duration of breastfeeding in well educated mother is 26 months as against 28 months

in poorly educated mother. In a study at Indonesia by Iskander in 1990 showed that well educated mothers wean their babies earlier than poorly educated mothers. In contrast to these studies Swenson et al in 1993 at Vietnam showed that highly educated mother breastfeed for longer duration. Hence maternal education has got mixed effect on breastfeeding practices.

Occupational status of mother

Many studies have shown that one of the barriers to breastfeeding is work status. With increased urbanization and industrialization, many women have joined the work force. In a study by Wyatt et al in 2002 it is clearly stated that an estimated 50% of women employed in the workplace were of reproductive age and return to work within 6 months to one year of their infant's birth.The National Maternal and Infant Health Survey (NMIHS) in 1998 explored the association between employment factors associated with breastfeeding initiation and duration. Results showed that maternal employment was not responsible for low rates of breastfeeding initiation. However it was observed that breastfeeding women who returned to work, their period of breastfeeding was lower when compared to breastfeeding women who did not work.

Attitude, confidence and intention of mother towards breastfeeding

The theory of planned behavior (TPB) has been used as a "theoretical framework" in breastfeeding research. As told by Duckett et al, 1998 attitude, subjective norm, and perceived control closely predict intention, which determines behavior. The constructs of TPB are that intention is predicted by attitude toward the behavior and subjective norm. Subjective norm is a "person's perception about what people in general think, a person should do with respect to target behavior" mentioned by Duckett et al., page 326,1998. Attitude in turn is predicted by beliefs about outcomes of the behavior and subjective norm is predicted by normative beliefs. Duckett et al .,1998 have shown that intention is related to breastfeeding initiation or duration.

POLICIES IN HOSPITAL

Rooming-in after delivery was found to promote breastfeeding. Mothers who practiced demand feeding were more likely to continue breastfeeding as found in a study by Dennis 2002b. Humenick et al, 1998 found that supplementary feeding with formula during the first few days after birth has been associated with breastfeeding failure. Postpartum assistance has been shown to increase breastfeeding rates among educated

mothers in a study by Humenick et al., 1998; Lawrence and Howard, 2001.Therefore in order to increase world wide breastfeeding rates WHO and UNICEF launched the Baby –Friendly Hospital Initiative in 1991. This initiative is comprised of ten steps to successful breastfeeding. The aim is to provide a health care environment for infants where breastfeeding is the norm as intended by Martens et al., 2000. Maternity centers must implement each of these ten steps to earn the designation of "baby-friendly" hospital.

SOCIOECONOMIC STATUS

In developed countries, women of high-income status and college-educated tend to have the highest breastfeeding rate, while young mothers from low socioeconomic backgrounds with low educational levels have the lowest breastfeeding rate. However, in a study by Beaudry et al 1995; Dennis, 2002b it was found that in developing countries, breastfeeding is inversely related to socioeconomic status. Most commonly researched links between maternal education and child health is SES, where there is increased ability to obtain services linked with health outcomes as stated by cleland & Van ginnekan,1988 ; Defo 1997. Education has a clear connection to income. Barret & Brownre et al 1996 found that women with

higher education are more likely to secure superior jobs that pay in cash to supplement their family income. The influence of SES on health behavior is clearly evident. As studied by Barret & Browne 1996 higher SES is likely to have better housing conditions and thereby lower rate of contaminants. Among people of higher SES money is spent on nutritious food and better health care facilities which has got direct impact on child's health. In a study by Bicego & Ahmad in 1996 SES was found to have strong association with infant and child mortality. In summary SES which indirectly includes many maternal characteristics including education and nutritional status has consistent link in child's nutrition as evident by Cleland & Van Ginnekan in 1998 ; Desai & Alva in 1998.

5. METHODS AND METHODOLOGY

STUDY DESIGN **:** Cross sectional Descriptive study.

STUDY PERIOD : November 2011 to May 2012.

STUDY PLACE :

Anganwadis in Periyamilaguparai, Chinnamilaguparai, Woraiyur, Ennamkulathur, Karumandapam and adjoining Anganwadis in and around MGM Government hospital. Trichy city.

NUMBER OF SUBJECTS STUDIED

528 Children less than 2 years and their mother's.

INCLUSION CRITERIA

1. Any child less than 2 years of age and his/her mother.
2. Birth weight > 2. 5 kgs.
3. Full term singleton birth.
4. Mother in the age group 19 years to 31 years with no significant medical illness.
5. Baby being taken care of by the mother chiefly.
6. Absence of significant medical illness in the child.

EXCLUSION CRITERIA

1. Adopted child
2. Any child whose mother has expired.
3. Mother with chronic systemic illness .
4. Baby with birth weight < 2.5 kgs / preterm
5. Babies born by caesaerean section.
6. Babies needing admission in NICU due to some perinatal complications.

BASIC ASSUMPTION

1. All the children who were included in the study were residents in and around Trichy city and hence they were good representative of the general population.
2. All the study subjects were explained about the purpose of the study and hence their answers were true reflection of their breastfeeding practices.

DATA COLLECTION

Data was collected in predesigned questionnaire. Questions were asked to mothers as per the questionnaire in their own language and the response was recorded in English. The questionnaire contained certain particulars of the mother like age at child birth, educational level,

occupation, pregnancy desirability, number of antenatal visits, intake of iron and folic acid tablets, socioeconomic status and their knowledge and attitude towards breastfeeding and details about initiation and duration of breastfeeding, artificial feeding, reasons for weaning and weaning practices, delivery details and place of birth. The response rate was 100 %. Nutritional status of mother was assessed by BMI and the presence or absence of clinical features of nutritional deficiency was looked for. Weight was recorded by weighing machine and height by an non stretchable inch tape. Infants anthropometric measurements (height, weight, head and chest circumference and midarm circumference) was measured on the day of interview. Infants were weighed with light clothes with weighing scale with an accuracy of 10 grams and length was measured using non stretchable inch tape with 2 boards, one at the head end and the other at the foot end. Based on their response, babies were recruited into exclusive breastfeeding and nonexclusive breastfeeding groups. A probability value (p value) of less than 0.05 was considered to be statistically significant. They were given the correct advice after the interview and all looked concerned and grateful.

ETHICAL APPROVAL

Ethical approval and permission was obtained from ethical committee members. The study purpose was explained to the mother's before they were requested to participate in the study.

OBJECTIVE 1

6. ANALYSIS OF VARIOUS DEMOGRAPHIC FACTORS

TABLE - I (a)

CORRELATION BETWEEN LEVEL OF EDUCATION WITH INITIATION OF BREASTFEEDING

Educational status	Time of initiation of breastfeeding				Total
	Not initiated at all	Greater than 1 day	1 Hr – 1 day	Less than 1 hr	
Illiterate	6 (28.57 %)	2	1	12 (57.14%)	21 (4%)
Primary School	0	9	10	34 (64.15%)	53 (10%)
High School	8 (3.57%)	37	45	134 (59.82%)	224 (42.4%)
Higher Secondary School	3 (2.65%)	15	29	66 (58.40%)	113 (21.4%)
College	2 (18.18%)	17	35	63 (53.84%)	117 (22.2%)
Total	19	80	120	309	528

Out of the total 528 subjects 21 (4.0%) were illiterate, 53 subjects have done primary education (10.0%). People who did high school make great majority of 224 subjects (42.4 %). Higher secondary school level education contributes to 21.4% with 113 subjects and college level 22.2 % with 117 subjects.

Now correlating the educational status with initiation of breastfeeding, out of 4 % of the illiterates 57.14 % have initiated breastfeeding in less than 1 hour and 28.5 % have not initiated breastfeeding at all. Out of the 42.4 % of the subjects who did education until high school which constitutes the great majority of subjects in our study, 59.82 % have initiated breastfeeding in less than 1 hour and 3.57 % did not initiate breastfeeding at all. By chi-square test the p value among these 2 groups is 0.4 stating that literacy level do not have significance in time of initiation of breastfeeding.

TABLE - I (b)

CORRELATING LEVEL OF EDUCATION WITH ADMINISTRATION OF COLUSTRUM

Educational status	Not given	Given	Total
Illiterate	8 (61.90%)	13 (38.90%)	21
Primary School	6 (88.67%	47 (11.32%)	53
High School	39 (82.58%)	185 (17.41%)	224
Higher Secondary School	25 (22.12%)	88 (77.87%)	113
College	21 (82.05%)	96 (17.94%)	117
Total	99	429	528

Out of the 4 % of the illiterates 61.90 % has given colustrum and 38.90 % has not given colustrum. Among the primary level school of education 10.0 % of the subjects 88.67 % have given colustrum 11.32 % have not given colustrum. Among the 42.4 % of the high school subjects 82.58 % has given colustrum and 17.41 % have not given colustrum. Among the college level of education out of the 22.2 %, 82.05 % has given colustrum and 17.94 % has not given colustrum.The p value is 0.4 stating that level of education did not have correlation with administration of colustrum.

TABLE - 1(c)

CORRELATION BETWEEN LEVEL OF EDUCATION WITH DURATION OF EXCLUSIVE BREASTFEEDING

Educational status	Not given	Less than 6 months	Greater than 6 months	Total
Illiterate	5	4	12 (57.14%)	21
Primary School	0	17	36 (67.92%)	53
High School	15	73	136 (60.71%)	224
Higher Secondary School	5	30	78 (69.02%)	113
College	9	65	43 (36.75%)	117
Total	34	189	305	528

Among the 4 % of the illiterates 57.14 % have breastfed their babies exclusively. Among the primary school, high school, higher secondary and college level of education 67.92 %, 60.71 %, 69.02 % and 37.60 % have exclusively breast fed their babies.

The inference is that level of education has got very high significant correlation with duration of exclusive breastfeeding where among the illiterate group only 57.14 % and among the middle and high school level 65.73 % have breastfed beyond 6 months with a p value of < 0.0001 but however has got negative correlation with college level of education.

FIGURE – 1

LITERACY LEVEL WITH DURATION OF BREASTFEEDING

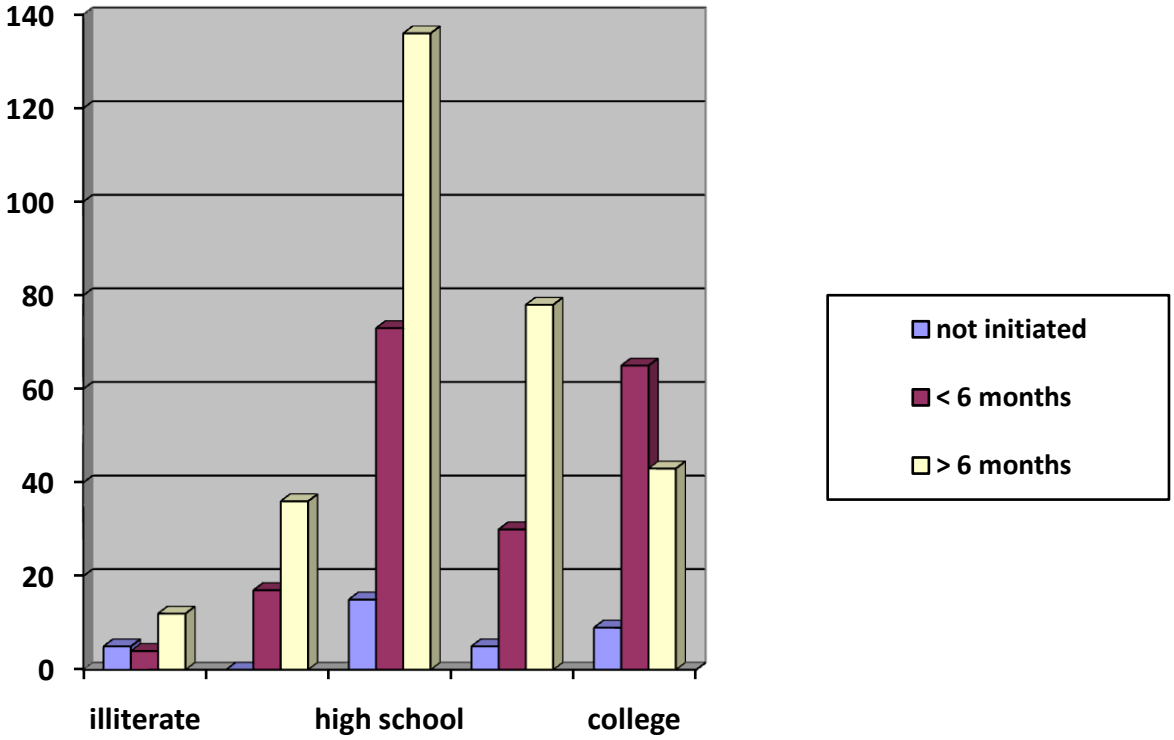


TABLE – I (d)

CORRELATION BETWEEN EDUCATIONAL STATUS AND USAGE OF BOTTLE FEEDING

Bottle feeding	Educational status					Total
	Illiterate	Primary School	High School	Higher Secondary School	College	
Used	11 (52.38%)	40 (75.47%)	125 (55.80%)	49 (43.36%)	68 (58.11%)	293
Not used	10	13	99	64	49	235
Total	21	53	224	113	117	528

In this study population out of the 528 subjects 293 subjects 55.5 % have used bottle feeding and 235 subjects 41.88 %. have not used bottle feeding. But beyond completion of college level of education 55.5 % have used bottles and 44.1 % have not used bottles showing negative correlation. When usage of bottle feeding was compared, 52.38 % of illiterates and only 43.36 % of higher sec level of education have used bottles with a p value is 0.03 showing significant correlation between educational status and usage of bottle feeding.

FIGURE - 2

LITERACY LEVEL WITH BOTTLE FEEDING

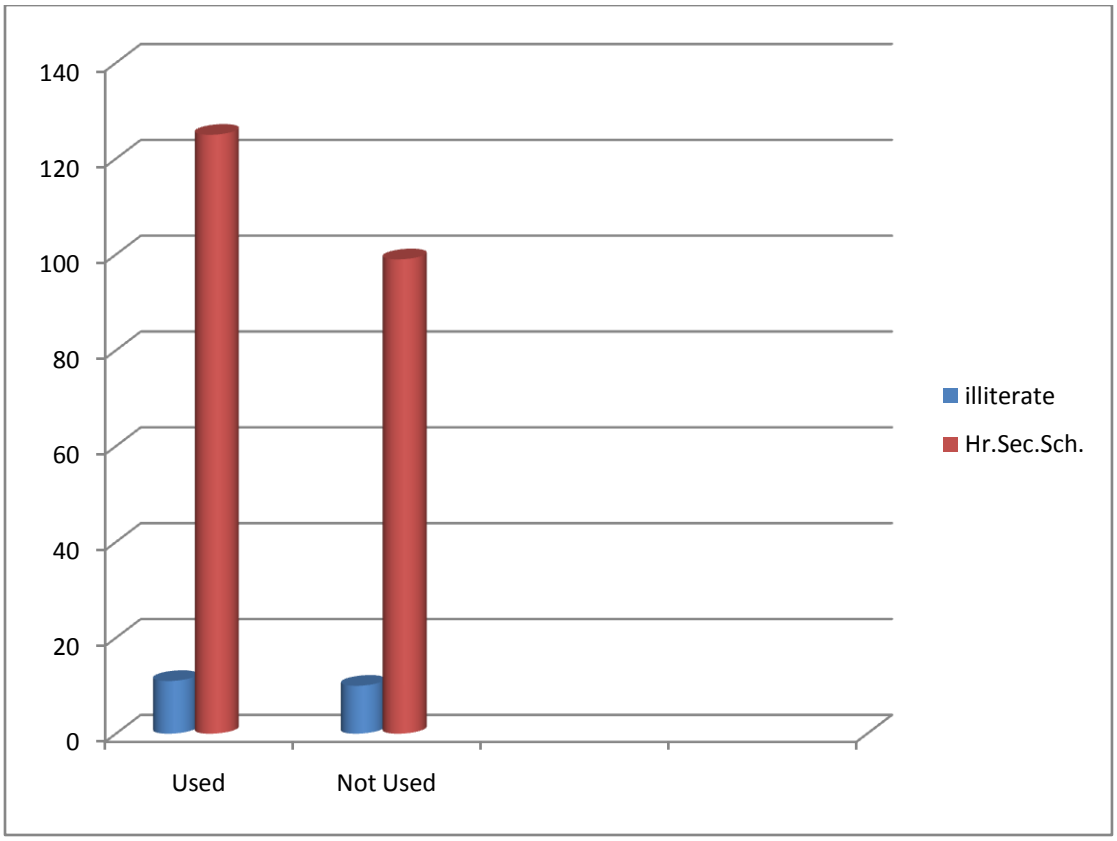


TABLE - II

CORRELATION BETWEEN OCCUPATION AND DURATION OF EXCLUSIVE BREASTFEEDING

Occupation	Not given	Less than 6 months	Greater than 6 months	Total
Working	2 (4.76%)	17 (40.47%)	23 (54.76%)	42
Not working	32 (6.58%)	172 (35.39%)	282 (58.02%)	486
Total	34	189	305	528

Out of the 528 subjects 486 subjects 92.04 % were not working and 42 subjects 7.95 % were working. Now taking into consideration of those who did not initiate breastfeeding at all, it is 4.76 % among the not working group and 6.58 % among the working group. While considering those who breastfed for < 6 months, it is 40.47 % among the working group and 35.39% among the not working group. Among those who fed their babies beyond 6 months 54.76 % were working and 58.02 % were not working thus showing that occupation did not have significant relation with duration of exclusive breastfeeding with p value of 0.6 .

TABLE - III (a)

CORRELATION BETWEEN AGE AT CHILD BIRTH AND TIME OF INITIATION OF BREASTFEEDING

Time of initiation	Age at child birth			
	19-23 Yrs	**24-26 Yrs**	**27-31 Yrs**	**Total**
Not initiated at all	1	15	3	19
Greater than 1 day	24	49	7	80
1 Hr - 1 day	44	50	26	120
Less than 1 hr	108 (61.01%)	161(58.54%)	40 (53.33%)	309
Total	177	275	76	528

In our study population 275 subjects 52.08 % were in the age group of 24 -26 years where 58.54 % have initiated breatfeeding in < 1 hour followed by the age group of 19 -23 years which comprises 33.52 %, 61.01 % have initiated breastfeed in < 1 hour followed by 76 subjects ie 14.2 % in the age group 27-31 years where 53.33 % have initiated breastfeed in < 1 hour. Here the p value is 0.01 showing that age at child birth has got significant relation with time of initiation of breastfeeding where young mothers have initiated breastfeeding earlier than elderly mothers.

FIGURE - 3

AGE AT CHILD BIRTH WITH TIME OF INITIATION OF BREASTFEEDING

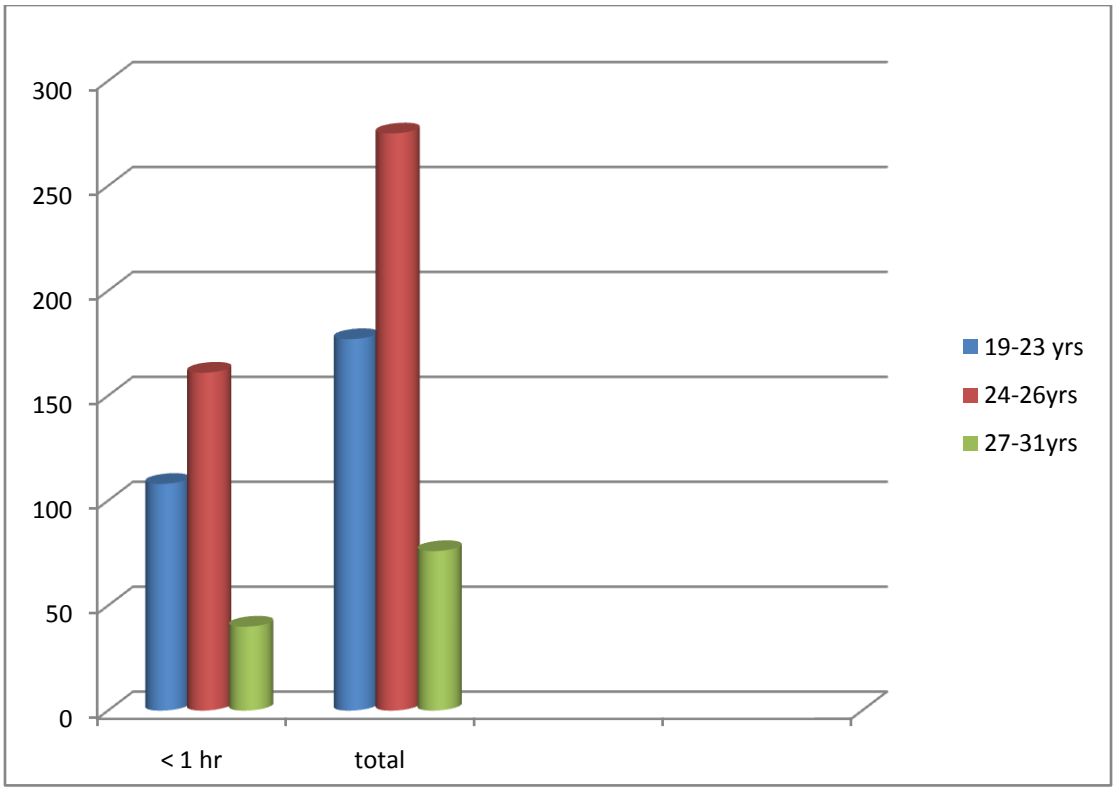


TABLE - III (b)

CORRELATING AGE AT CHILD BIRTH WITH DURATION OF EXCLUSIVE BREASTFEEDING

Duration of exclusive breastfeeding	19-23 yrs	24-26 Yrs	27-31 Yrs	Total
Not given	6	23	5	34
Less than 6 months	69	97	23	189
Greater than 6 months	102	155	48	305
Total	177	275	76	528

Out of the 528 subjects 52.1 % of them were in 24-26 years out of which 55.63% have exclusively breastfed their babies followed by 33.5 % of those in 19 – 23 years where 57.62 % have breastfed their babies exclusively followed by the 27 -31 years of age group people where 64 % have given exclusive breastfeeding. But however the p value was 0.10 showing that age at child birth do not have statistical significance with duration of exclusive breastfeeding.

TABLE - IV(a)

CORRELATION BETWEEN PREGNANCY DESIRABILITY AND TIME OF INITIATION OF BREASTFEEDING

Pregnancy desirability	Time of initiation of breastfeeding				Total
	Not initiated at all	Greater than 1 day	1 Hr - 1 day	Less than 1 hr	
Wanted	19	77	115	305	516
Accidental Conception	0	3	5	4	12
Total	19	80	120	309	528

In our study population 516 subjects (97.72 %) wanted pregnancy and 12 subjects (2.27 %) wanted pregnancy sometime later. Out of the 97.72 % of those who wanted pregnancy 59.10 % initiated breastfeed in < 1 hour and among the other group 44.16 % initiated breastfeed > 1 hour but < 1 day and 33.33 % initiated in < 1 hour with a p value of 0.2 stating that pregnancy desirability did not have relation with time of initiation of breastfeeding.

TABLE - IV(b)

CORRELATION BETWEEN PREGNANCY DESIRABILITY AND DURATION OF EXCLUSIVE BREASTFEEDING

Pregnancy desirability	Not given	Less than 6 months	Greater than 6 months	Total
Wanted	34	185	297	516
Accidental Conception	0	4	8	12
Total	34	189	305	528

Out of the 97.72 % of the subjects who wanted pregnancy 57.55 % have given exclusive breastfeeds, and in those who wanted pregnancy later 2.27 % of subjects 66.66 % have given exclusive breastfeeding with a p value of 0.6 stating that pregnancy desirability do not have significant correlation with period of exclusive breastfeeding.

TABLE - V(a)

CORRELATING NO.OF ANTENATAL VISITS WITH TIME OF INITIATION OF BREASTFEEDING

Time of initiation of breast feeding	No.of Antenatal Visits		Total
	One	>3 visits	
Not initiated at all	0	19	19
Greater than 1 day	0	80	80
1 Hr - 1 day	0	120	120
Less than 1 hr	1	308	309
Total	1	527	528

Out of the 528 subjects only 1 female had antenatal visit of only once but then has given colustrum and initiated breastfeed with < 1 hour making up 100 % and the rest 527 subjects who had > 3 antenatal visits 99.8% , 81.78 % have given colustrum and 58.44 % have initiated breastfeeding in < 1 hour with a p value of 0.4 showing that the No.of antenatal visits did not have any relation with time of initiation of breastfeeding.

TABLE - V(b)

CORRELATING NO. OF ANTENATAL VISITS WITH ADMINISTRATION OF COLUSTRUM

Administration of Colustrum	No. of Antenatal Visits		Total
	One	>3 visits	
Not given	0	96	96
Given	1	431	432
Total	1	527	528

Out of the total 528 subjects, 81.78 % have given colustrum among those who had > 3 antenatal visits. Only one female had single antenatal visit and she has also given colustrum stating that no. of antenatal visits do not have significance with colustrum administration since almost all of the study subjects had > 3 antenatal visits. Here the p value by chi- square test is 0.6.

TABLE - V(c)

CORRELATION BETWEEN NO. OF ANTENATAL VISITS AND PERIOD OF EXCLUSIVE BREASTFEEDING

No. of Antenatal visits	Not given	Less than 6 months	Greater than 6 months	Total
One	0	1	0	1
>Three	34	188	305	527
Total	34	189	305	528

Out of the 528 subjects only 1 subject had antenatal visit of only once and she had not exclusively breastfed her baby. Out of the 527 subjects 6.45% had not initiated breastfeed at all, 35.67 % have breastfed for < 6 months and 57.87 % have exclusively breastfed their babies stating that no. of antenatal visits do not have significant correlation with period of exclusive breastfeeding with a p value of 0.7 since in our study almost all had > 3 antenatal visit as against only one individual who had only once thus reflecting no difference in the 2 parameters.

TABLE - VI

CORRELATING THE PRESENCENCE OF NUTRITIONAL DEFICIENCY FEATURES WITH INITIATION OF BREASTFEEDING

Evidence of iron and vitamin deficiency	Time of initiation of breastfeeding.				Total
	Not initiated at all	Greater than 1 day	1 Hr - 1 day	Less than 1 hr	
Present	5	12	16	27 (45.0%)	60 (11.36%)
Absent	14	68	104	282 (60.25%)	468 (88.63%)
Total	19	80	120	309	528

This table shows that out of 528 subjects 60 subjects 11.36 % had evidence of iron and vitamin deficiency and 88.63 % ie 468 subjects did not have evidence of nutritional deficiency. When comparing those who had evidence of nutritional deficiency only 45.0 % have initiated breastfeeding in less than 1 hour as against 60.25 % who did not have evidence of nutritional deficiency with a p value of 0.04 which is statistically significant.

FIGURE -4

NUTRITIONAL DEFICIENCY FEATURES WITH TIME OF INITIATION OF BREASTFEEDING

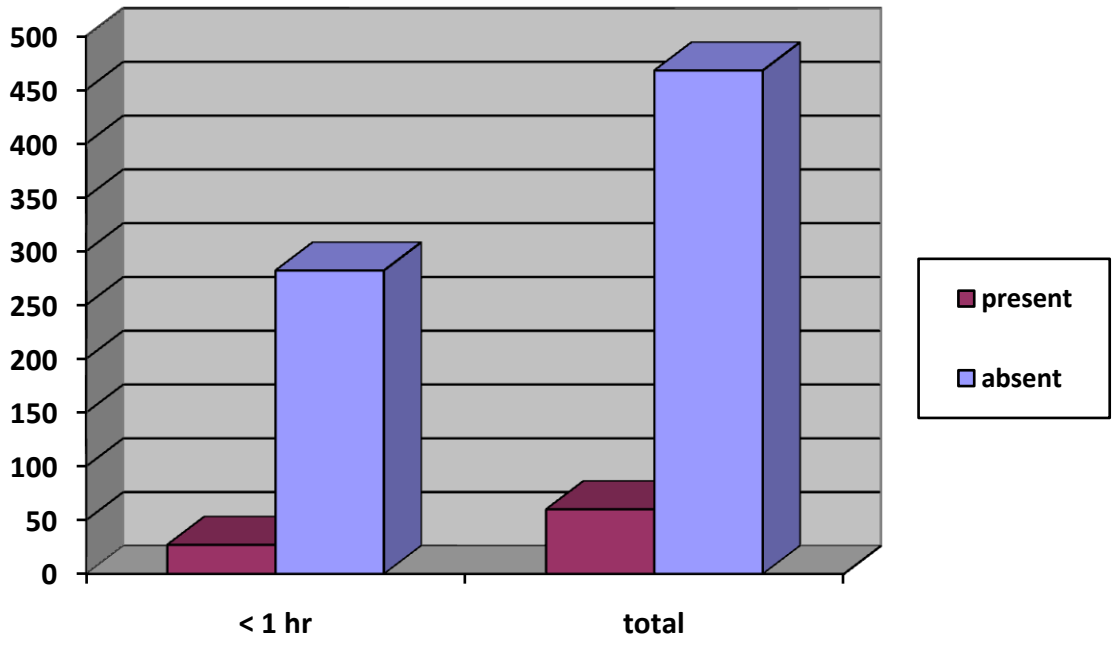


TABLE - VII (a)

CORRELATING THE SEX OF THE BABY WITH INITIATION OF BREASTFEEDING

Time of initiation of breastfeeding	Sex of the baby		Total
	Boy	Girl	
Not initiated at all	5	14	19
Greater than 1 day	44	36	80
1 Hr - 1 day	67	53	120
Less than 1 hr	159 (57.81%)	150 (59.28%)	309
Total	275	253	528

Out of the 528 subjects 275 subjects 52.08% were male babies and 253 subjects 47.9 % were female babies in which 57.81 % of male babies and 59.28 %of female babies have been initiated breastfeeding in < 1 hour with p value of 0.1 showing that there is no significant difference in sex in initiating breastfeeding.

TABLE - VII (b)

ORRELATION BETWEEN SEX OF THE BABY WITH DURATION OF EXCLUSIVE BREASTFEEDING

Duration of exclusive breastfeeding	Sex of the baby		Total
	Boy	Girl	
Not given	14	20	34
Less than 6 months	111	78	189
Greater than 6 months	150	153	305
Total	275	253	528

Out of the 528 subjects 275 subjects 52.08% were male babies and 253 subjects 47.9 % were female babies among which 54.54 % of male babies and 60.47 % of female babies were exclusively breastfed with p value of 0.09 stating that sex of the baby do not have any significant relation with duration of exclusive breastfeeding.

TABLE - VIII (a)

CORRELATION WITH BIRTH ORDER AND TIME OF INITIATION OF BREASTFEEDING

Time of initiation of breastfeeding	Order of birth			Total
	First	Second	Third	
Not initiated at all	9	3	7	19
Greater than 1 day	49	16	15	80
1 Hr - 1 day	69	49	2	120
Less than 1hr	156 (55.12%)	135 (66.50%)	18 (42.87%)	309
Total	283	203	42	528

Out of the 528 subjects 283 subjects 53.59 % were 1st , 203 subjects 38.4 % were 2nd order and 42 subjects 8.0 % were 3rd order out of which 55.12 % , 66.50 % and 42 . 87 % have initiated breastfeeding in < 1 hour respectively with p value of 0.0001 showing that there is statistically highly significant correlation between birth order and initiation of breastfeeding.

FIGURE - 5

BIRTH ORDER WITH TIME OF INITIATION OF BREASTFEEDING

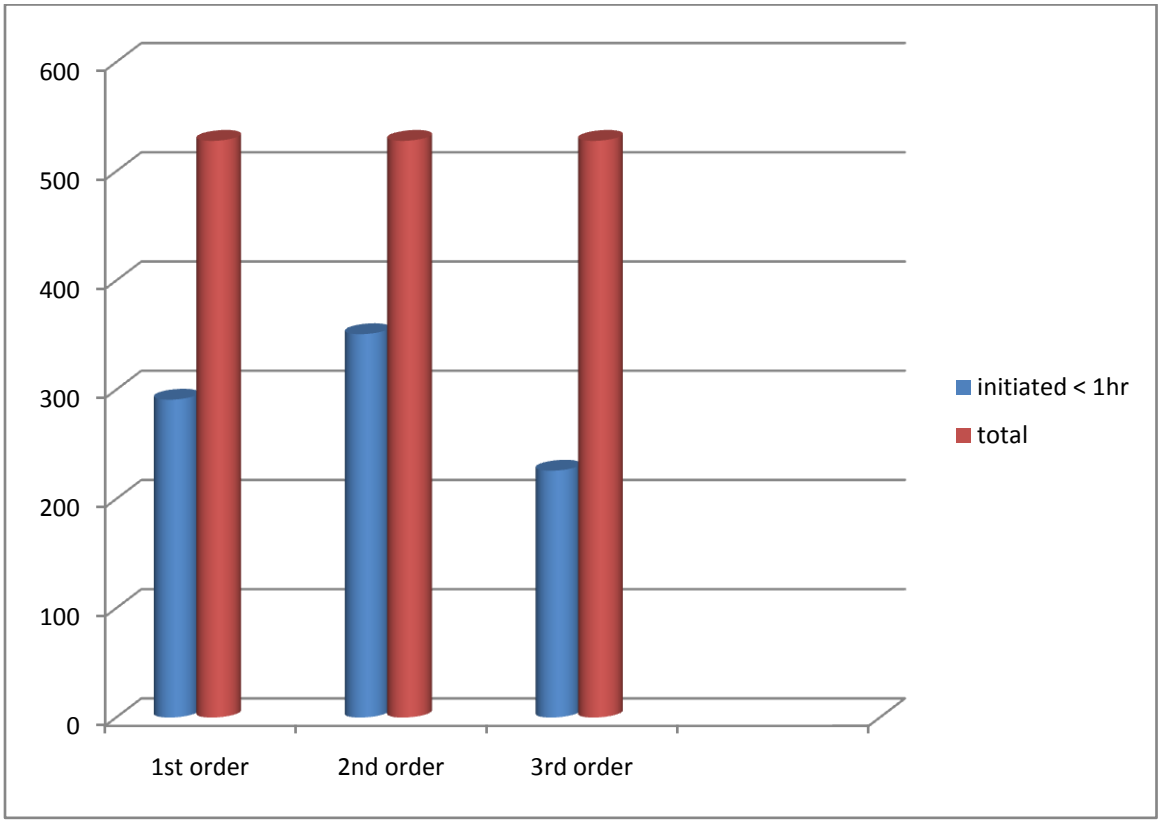


TABLE - VIII (b)

BIRTH ORDER WITH DURATION OF EXCLUSIVE BREASTFEEDING

Duration of exclusive breastfeeding	Order of birth			Total
	First	Second	Third	
Not given	18	7	9	34
Less than 6 months	92	79	18	189
Greater than 6 months	173(60.77%)	117(57.14%)	15(35.17%)	305
Total	283	203	42	528

Among the 1st, 2nd and 3rd order births 60.77 % , 57.14 % and 35.71 % of babies have been exclusively breastfed with a p value of 0.001 showing that birth order has highly significant correlation with duration of exclusive breastfeeding.

FIGURE - 6

BIRTH ORDER WITH DURATION OF EXCLUSIVE BREASTFEEDING

TABLE - IX

The reason for stopping breastmilk and introduction of other foods as told by mother's are tabulated below

Reasons for stopping breast milk	Educational status					Total
	Illiterate	Primary School	High School	Higher Secondary School	College	
No milk	12	34	135	67	58	306
Baby was sick	0	4	14	2	0	20
Inadequate milk secretion	0	5	7	8	11	33
Knowledge about weaning	0	1	33	13	16	57
Misconception	2	5	24	11	9	55
Next conception	5	1	5	8	1	20
Working \ studying	2	0	6	2	16	26
Baby refused	0	3	0	2	6	11
Total	21	53	224	113	117	528

Out of the 528 subjects ,306 subjects (58.0 %) have told that they did not have milk, followed by 57 subjects (10.79 %) who had prior knowledge about breastfeeding, 55 subjects (10.4 %) had misconception about breastfeeding, 33 subjects (6.25 %) have told that even though they have milk secretion, it is inadequate. 26 subjects (4.92 %) were working mothers, 20 subjects (3.78 %) stopped breastfeeding because of next conception and

FIGURE - 7

LITERACY LEVEL AND REASONS FOR STOPPING BREASTMILK

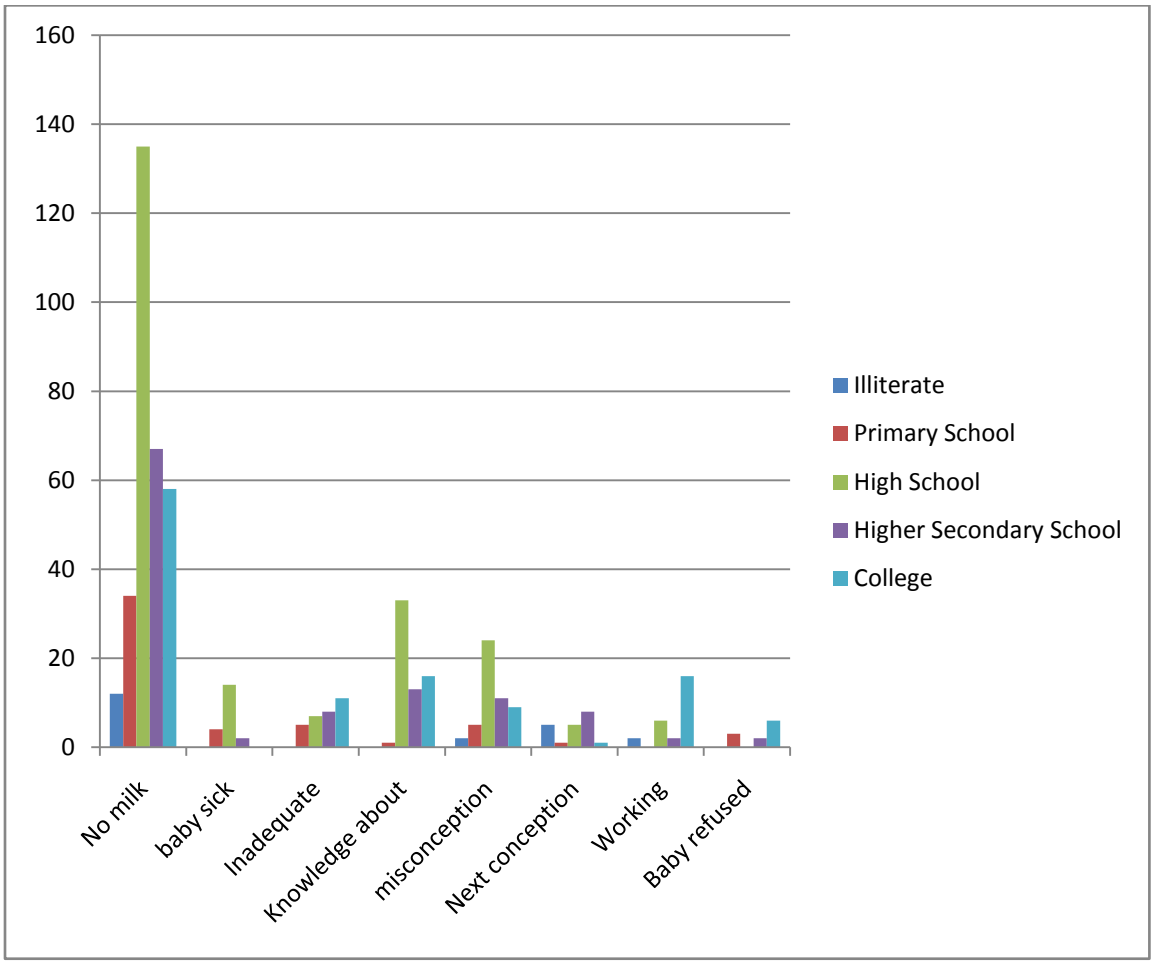
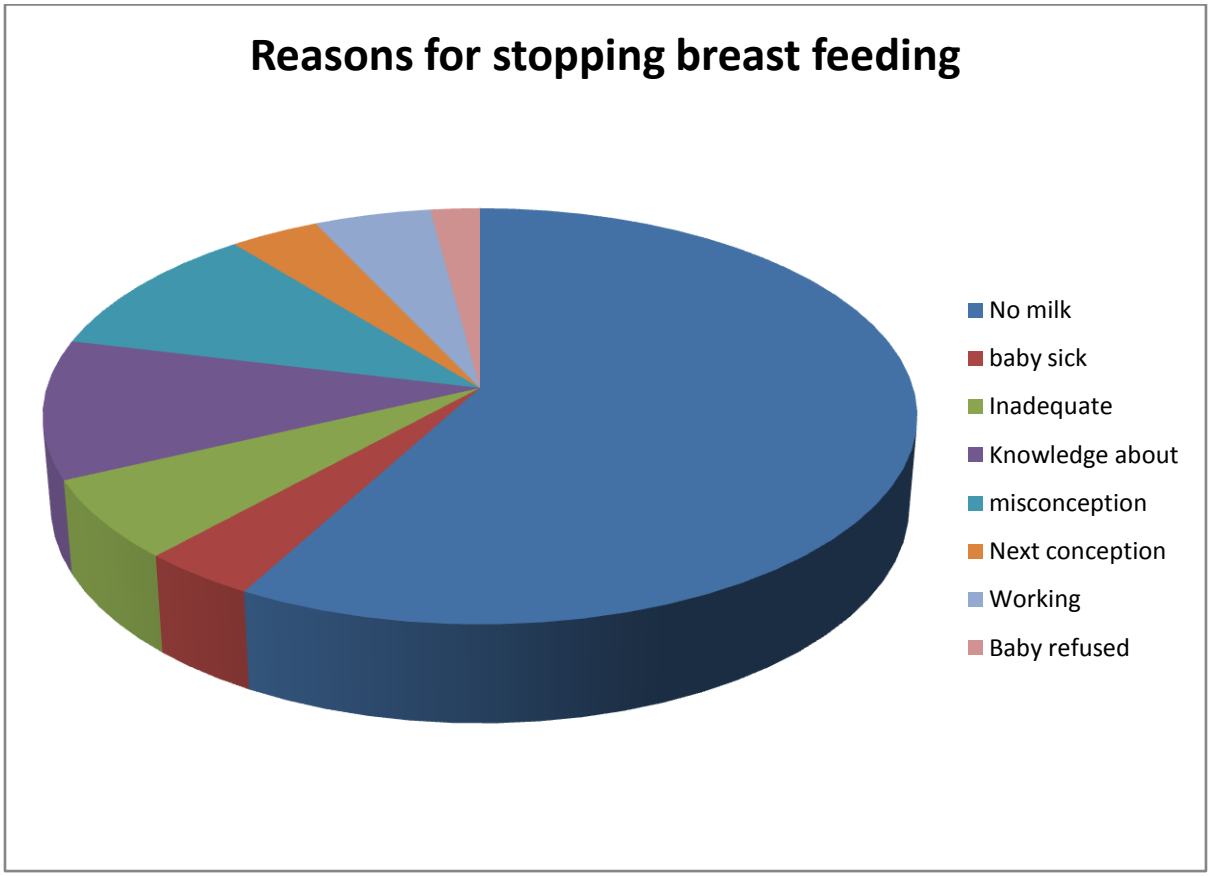


FIGURE – 8

REASONS FOR STOPPING BREAST FEEDING



equal number of subjects have told that baby was sick,11 subjects (2.08 %) have told that baby refused to suck at the breast and therefore they stopped breastfeeding.

When literacy level was related to weaning, among all level of education the 1st answer by the mothers was that they had "NO MILK ", among illiterates the 2nd common reason was next conception. Among the primary level of education the 2nd reason was inadequate milk secretion. As the level of education goes higher the reason was that they had prior knowledge about weaning and among college level of education the reason was working mothers and adequate knowledge about weaning sharing equal percentage of 13.67 with a p value of 0.0001 showing that literacy level has got statistically highly significant correlation with duration of breastfeeding.

TABLE - X (a)

SOCIOECONOMIC STATUS WITH ADMINISTRATION OF COLUSTRUM

Socioeconomic status	Colustrum Given	Not Given	Total
Upper	18	10	28
Upper Middle	93	19	112
Lower Middle	164	20	184
Upper Lower	103	25	128
Lower	31	45	76
Total	409	119	528

SES	Given	Not given	Total
Lower	31 (40.78%)	45	76
Others	378 (83.62%)	74	452

When comparing administration of colustrum between lower SES with rest of the socioeconomic status, it was found 40.78 % have given colustrum in Lower SES as against 83.62 % in other SES people with a p value of 0.0013 which is statistically highly significant.

FIGURE 9

SES WITH ADMINISTRATION OF COLUSTRUM:

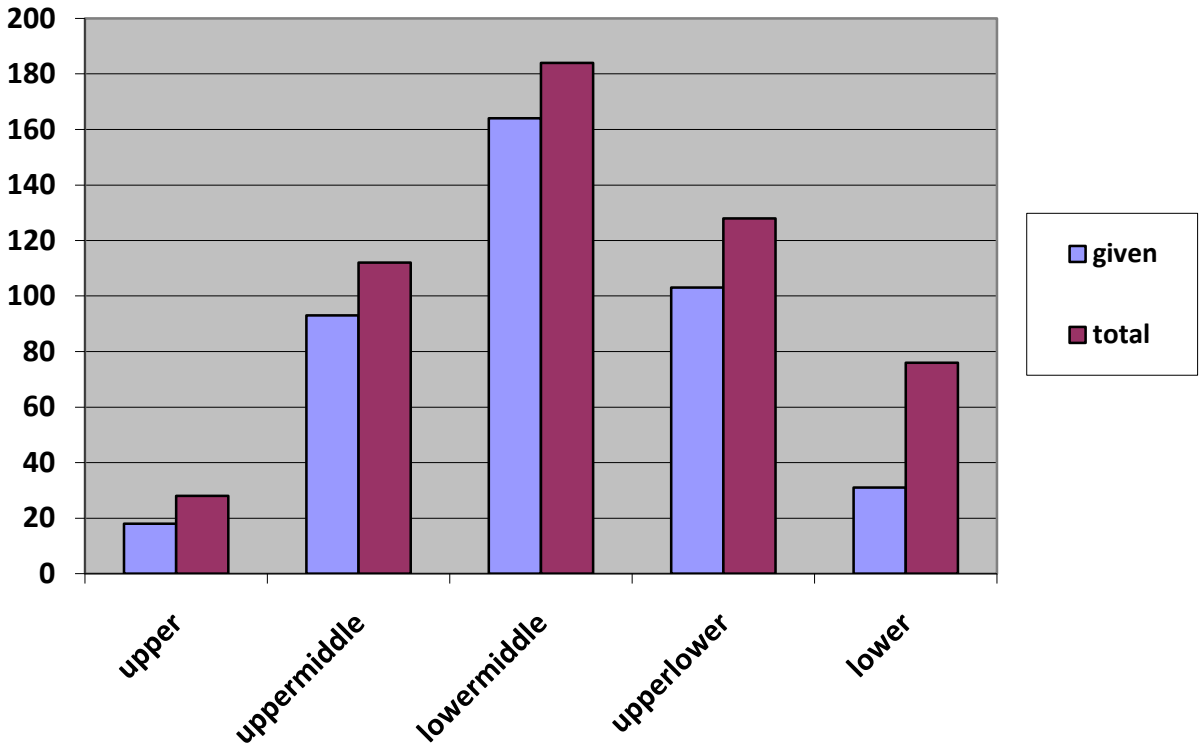


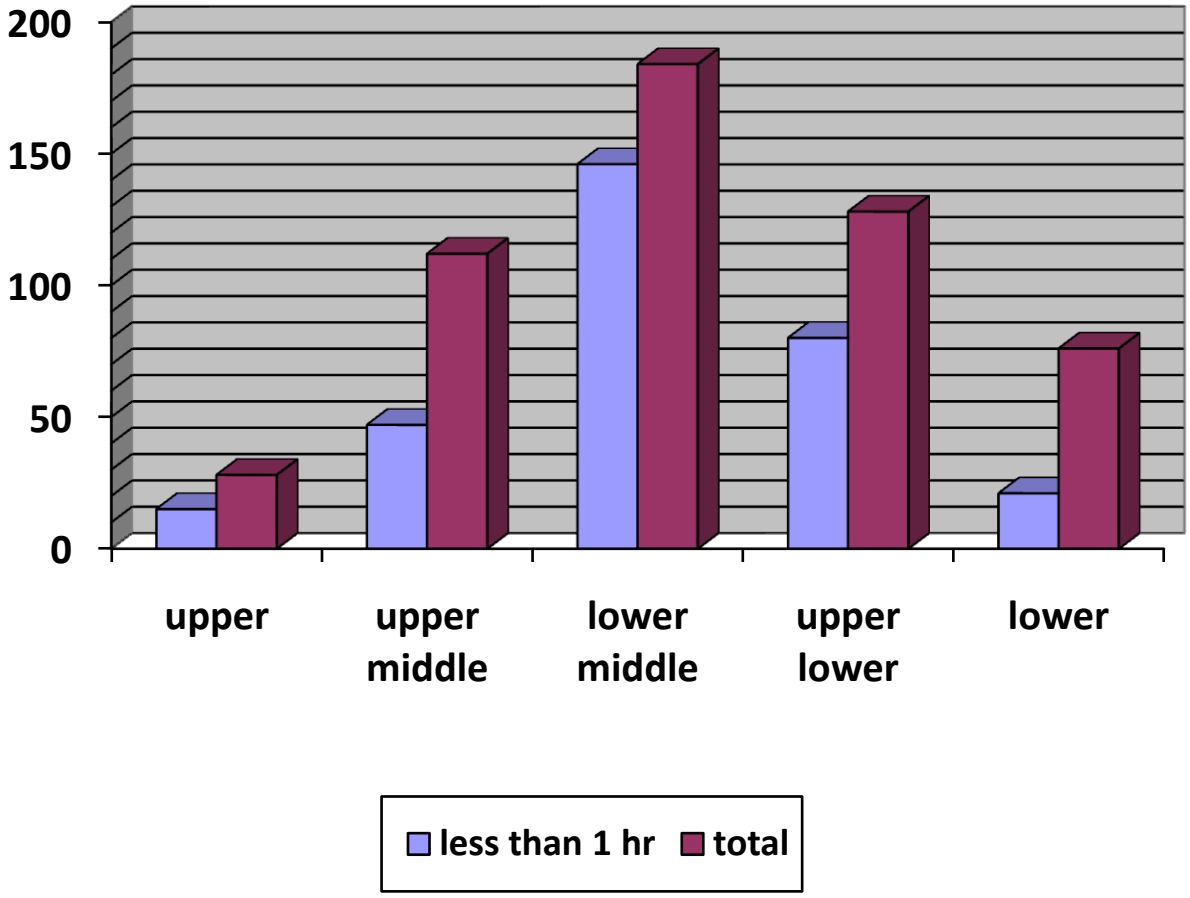
TABLE - X (b)

SOCIOECONOMIC STATUS WITH TIME OF INITIATION OF BREAST FEEDING

Socioeconomic status	Time of initiation of breast feeding				Total
	Not initiated at all	Greater than 1 day	1 Hr - 1 day	Less than 1 hr	
Upper	1	5	7	15	28
Upper Middle	2	14	49	47	112
Lower Middle	3	16	19	146	184
Upper Lower	4	24	20	128	128
Lower	9	21	25	21	76
Total	19	80	120	309	528

FIGURE - 10

SES WITH TIME OF INITIATION OF BREASTFEEDING.



	Less than 1 hr	Not given	Total
Lower	21 (27.63%)	9	76
Total	288 (63.71%)	10	452

While comparing the SES with initiation of breastfeeding it was found that among the Lower SES class out of 14.39 % only 27.63 % have initiated breastfeeding in < 1 hr when compared with other SES where 63.71 % have initiated breastfeeding in less than 1 hr with a p value of 0.0008 which is statistically highly significant showing that lower SES people delay in initiating breast feeding.

TABLE - X (C)

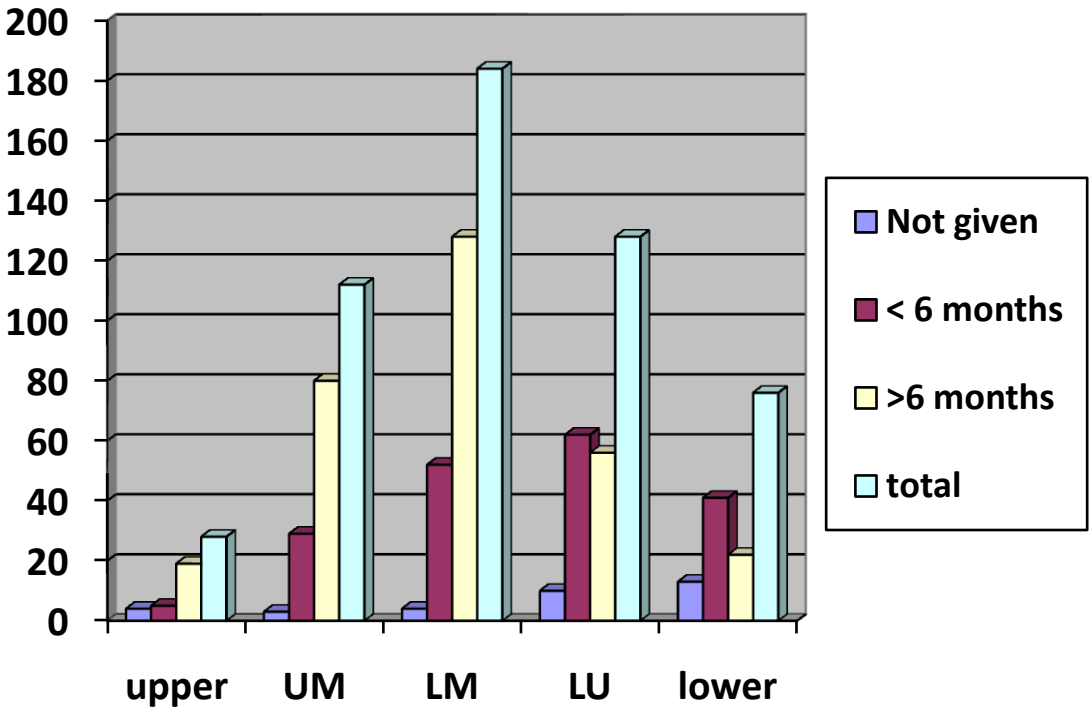
SOCIOECONOMIC STATUS WITH DURATION OF EXCLUSIVE BREASTFEEDING

Socioeconomic status	Not given	Less than 6 months	Greater than 6 months	Total
Upper	4	5	19	28
Upper Middle	3	29	80	112
Lower Middle	4	52	128	184
Upper Lower	10	62	56	128
Lower	13	41	22	76
Total	34	189	305	528

Even though out of 5.30 % of upper SES 67.85 % have breastfed for more than 6 months in comparison to lower SES where out of 14.39% , 28.94 % have breastfed for more than 6 months the p value obtained is 0.196 by chi – square test saying that SES has got no statistical significance with duration of breastfeeding.

FIGURE 11

SES WITH DURATION OF BREASTFEEDING



ANALYSIS OF DEMOGRAPHIC FACTORS - CONSOLIDATION OF RESULTS OBTAINED

Table I (a)	Education with initiation of BF	0.4	Not Significant
Table I (b)	Administration of colustrum	0.4	Not Significant
Table I (c)	Duration of breastfeeding	< 0.0001	Highly Significant
Table (d)	Bottle feeding	0.03	Significant

Table II	Occupation Vs Duration of breastfeeding	0.6	Not Significant

Table III (a)	Age at child birth Vs Initiation of BF	0.01	Significant
Table III (b)	Duration of Breastfeeding	0.1	Not Significant

Table IV (a)	Pregnancy desirability Vs Initiation of BF	0.2	Not Significant
Table IV (b)	Duration of breastfeeding	0.6	Not Significant

Table V (a)	No. of Antenatal visit with initiation of BF	0.4	Not Significant
Table V (b)	Administration of colustrum	0.6	Not Significant
Table V (c)	Duration of breastfeeding	0.7	Not Significant

Table VI	Nutritional deficiency features with initiation of BF	0.04	Significant

Table VII (a)	Sex of the baby with initiation	0.1	Not Significant
Table VII (b)	Duration of breastfeeding	0.09	Not Significant

Table VIII (a)	Birth order with initiation of BF	0.0001	Highly Significant
Table VIII (b)	Duration of breastfeeding	0.001	Highly Significant

Table X (a)	SES with administration of colustrum	0.001	Highly Significant
Table X (b)	Initiation of BF	0.0008	Highly Significant
Table X (c)	Duration of BF	0.196	Not Significant

OBJECTIVE 2:

(A) STATISTICAL ANALYSIS OF NUTRITIONAL STATUS OF MOTHER WITH ANTHROPOMETRY OF BABY:

- **NUTRITIONAL STATUS OF MOTHER IS ASSESSED BY**

1. PRESENCE OR ABSENCE OF NUTRITIONAL DEFICIENCY

2. BMI OF THE MOTHER.

- **ANTHROPOMETRY OF BABY IS INTERPRETED BY WHO GROWTH CHARTS.**

TABLE - XI (a)

CORRELATION BETWEEN THE PRESENCE AND ABSENCE OF NUTRITIONAL DEFICIENCY IN MOTHER WITH ANTHROPOMETRY OF THE CHILD

Anthropometry of the baby in percentiles	Evidence of nutritional deficiency in mother		Total
	Present	Absent	
Less than 3	12 (20.0%)	86 (18.37%)	98
3-15	13	175	188
15-50	34	189	223
50-85	1	18	19
Total	60 (11.4%)	468 (88.6%)	528

Correlating the presence or absence of iron / vitamin deficiency in mother with anthropometry of the child, 11.4 % of the mother's had evidence of nutritional deficiency among which 20 % of their babies fall under 3 rd percentile when compared with 88.6 % of those without any evidence of nutritional deficiency where 18.37 % fall under 3 rd percentile with a p value of 0.05 stating that there is statistically significant correlation between the presence or absence of nutritional deficiency of the mother with anthropometry of the child.

FIGURE 12

NUTRITIONAL DEFICIENCY FEATURES IN MOTHER WITH ANTHROPOMETRY OF THE BABY

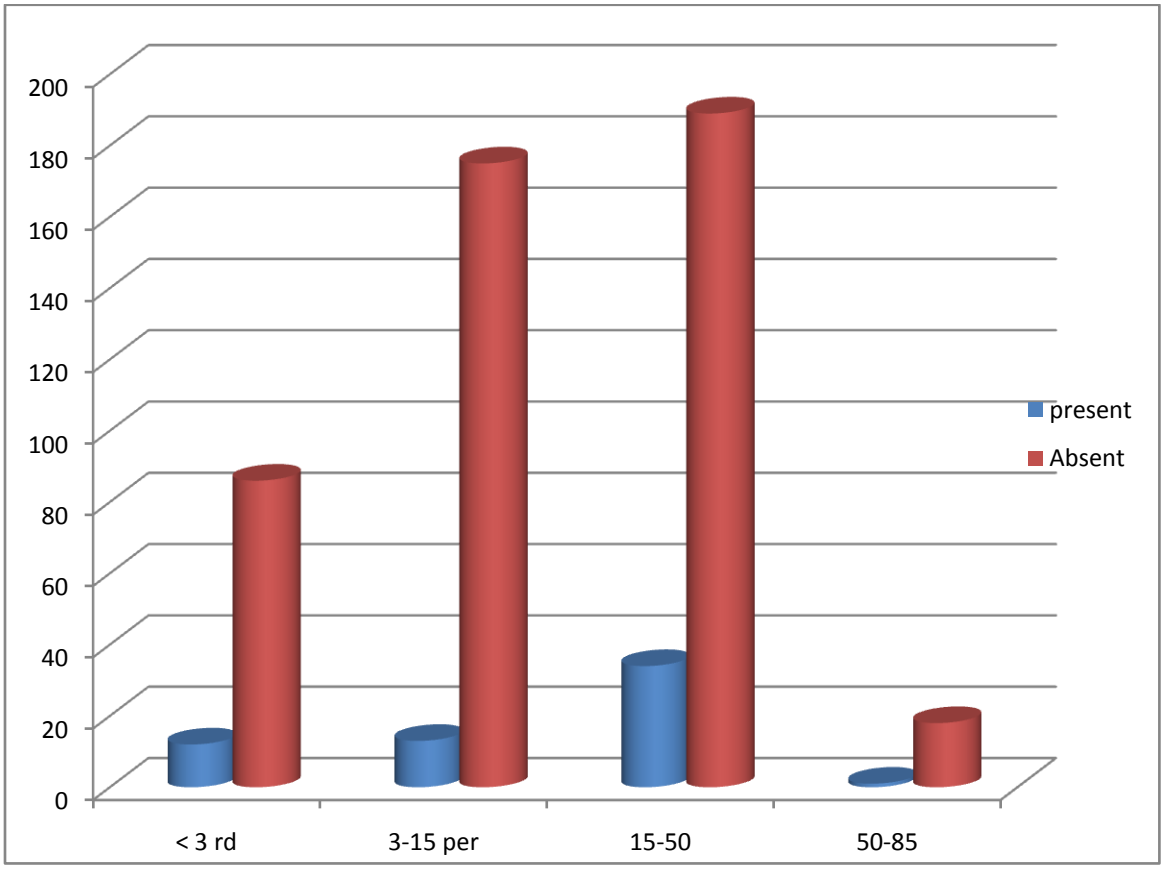


TABLE - XI (b)

CORRELATION BETWEEN BMI OF MOTHER WITH ANTHROPOMETRY OF THE CHILD

Anthropometry of the child	BMI of the mother				Total
	18.5-24.9 Normal	25-29.9 Over Wt	30-34.9 Class I Obesity	LT 18.5 Under Weight	
Less than 3	63 (13.81%)	9	8	18 (75.0%)	98
3-15	168	10	4	6	188
15-50	209	10	4	0	223
50-85	60	3	0	0	19
Total	456	32	16	24	528

When BMI was correlated with anthropometry it was found that among the normal BMI group of 86.36 % , only 13.81 % of their babies fall under < 3rd percentile when compared with underweight group of 4.54 % where 75 % of their babies fall under 3rd percentile suggesting that BMI of the mother has got statistically significant correlation with anthropometry of the baby with a p value of 0.014.

FIGURE - 13

BMI OF MOTHER WITH ANTHROPOMETRY OF BABY

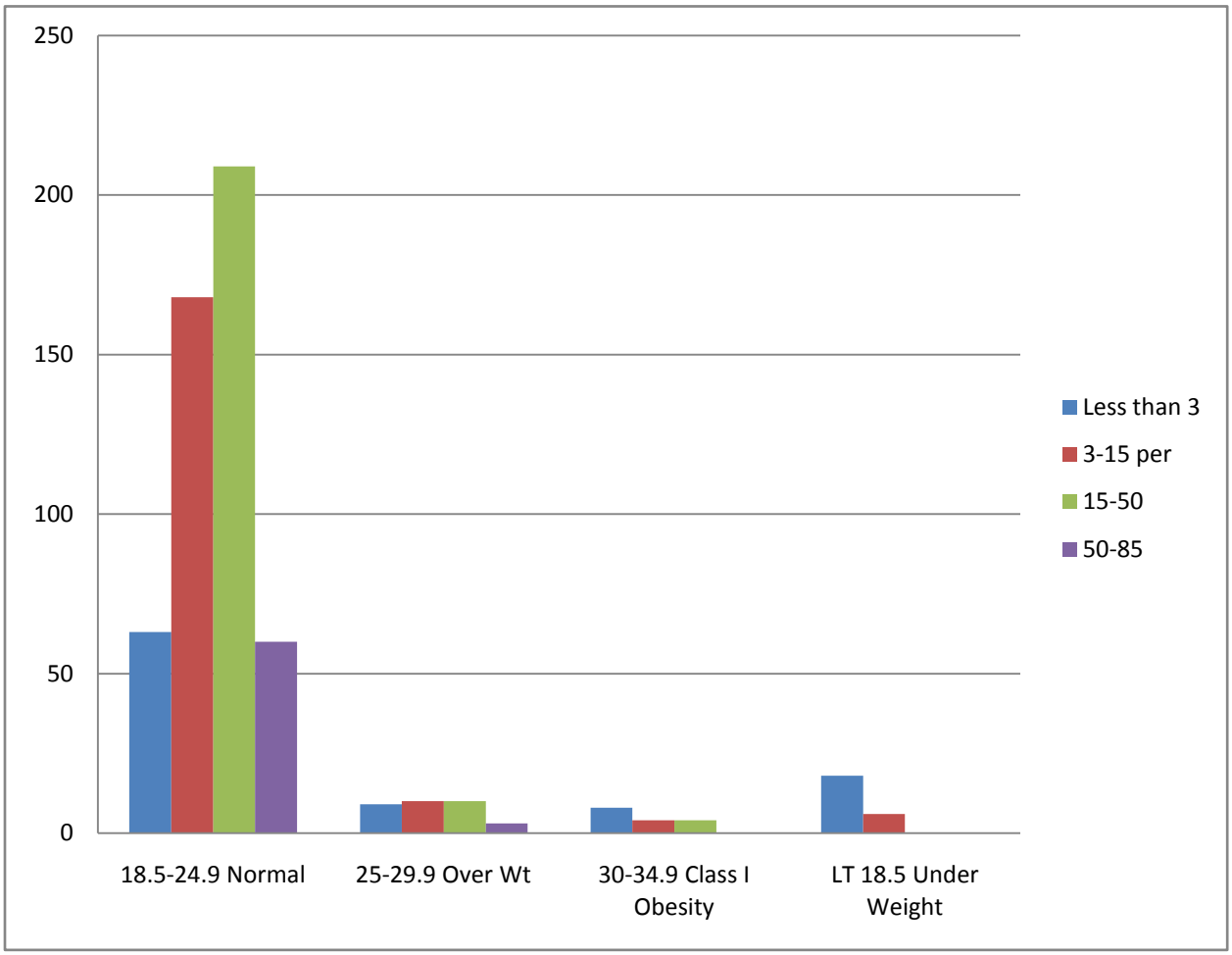


TABLE- XI (c)

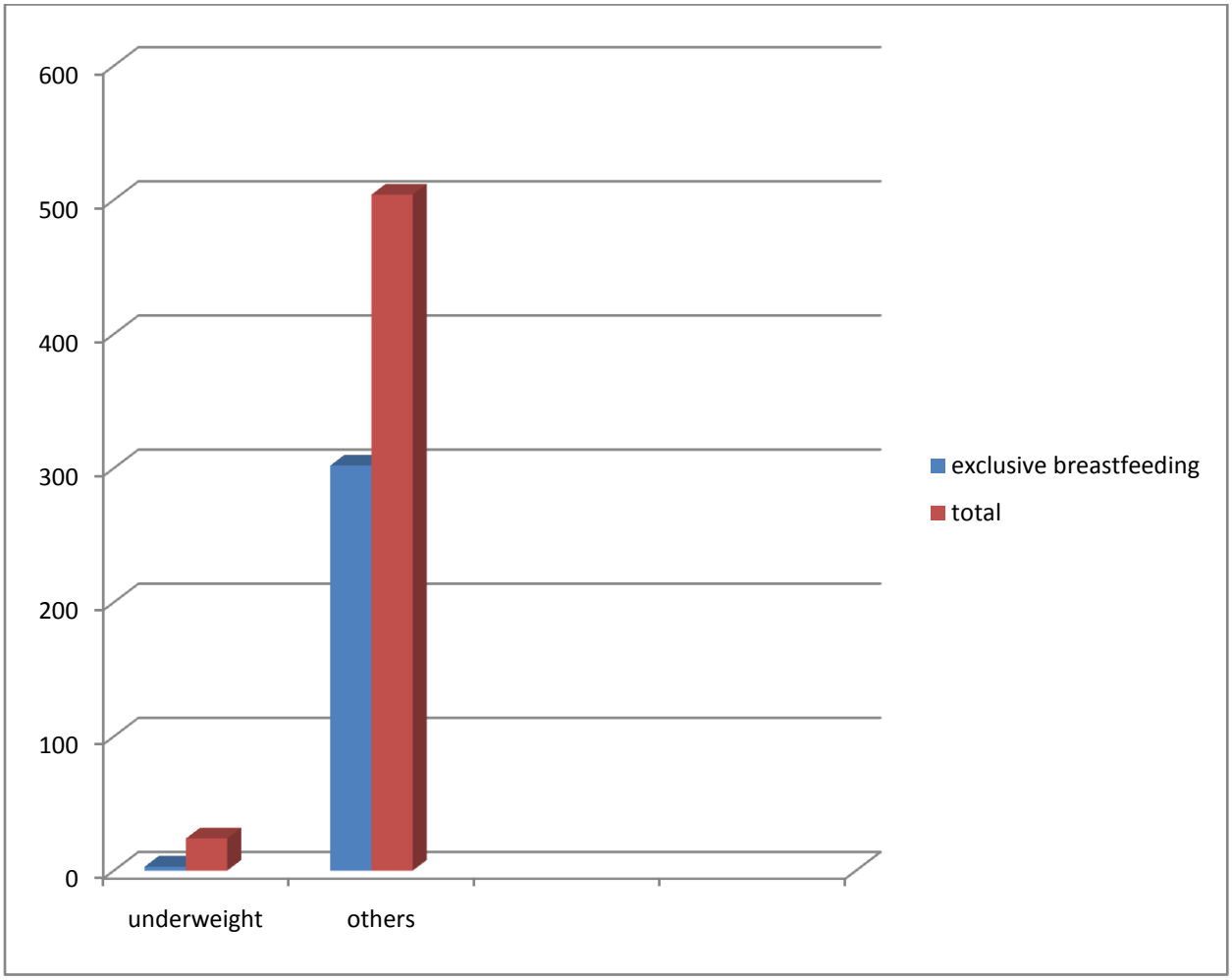
CORRELATION BETWEEN BMI AND DURATION OF EXCLUSIVE BREASTFEEDING

Duration of exclusive breastfeeding	BMI				Total
	18.5-24.9 Normal	25-29.9 Over Wt	30-34.9 Class I Obesity	Less than 18.5 Under Weight	
Not given	5	7	3	19	34
Less than 6 months	176	5	6	2	189
Greater than 6 months	275(60. 30%)	20(62.5%)	7(43.75%)	3(12.5%)	305
Total	456(70.64%)	32(26.5%)	16(2.08%)	24(4.54%)	528

In this study population70.64 % fall under normal BMI (18.5- 24.9), 26.5 % overweight (25 – 29.9) , 2.08 % under obesity (30-34.9) and 4 .54 % were underweight. When comparing underweight mothers with the rest of the population only 12.5 % have practiced exclusive breastfeeding as against 59.92% with a p value of 0.004 which is statistically highly significant.

FIGURE - 14

BMI OF MOTHER WITH DURATION OF BREASTFEEDING



CONSOLIDATION OF RESULTS

A. NUTRITIONAL STATUS OF MOTHER WITH THROPOMETRY OF BABY

Table XI (a)	Nutritional status of mother with Anthropometry	0.05	Significant
Table XI (b)	BMI of mother with Anthropometry	0.014	Significant
Table XI (c)	BMI with Duration of Breastfeeding	0.004	Highly Significant

(B) STATISTICAL ANALYSIS BETWEEN SOCIOECONOMIC STATUS WITH NUTRITIONAL STATUS OF THE MOTHER

TABLE - XII (a)
SOCIOECONOMIC STATUS WITH EVIDENCE OF NUTRITIONAL DEFICIENCY

Socioeconomic status	Features of nutritional deficiency		Total
	Present	Absent	
Upper	1 (3.57%)	27	28
Upper Middle	7	105	112
Lower Middle	5	179	184
Upper Lower	16	112	128
Lower	28 (36.84 %)	48	76
Total	60	468	528

When SES was cross tabulated with the presence or absence of features of iron and vitamin deficiency it was found that only 3.57 % of upper SES people had evidence of nutritional deficiency in contrast to lower SES people where 36.84 % of mother's had evidence of nutritional deficiency with a p value of 0.007 which is statistically highly significant stating that mother's in lower SES have features of nutritional deficiency.

FIGURE - 15

SES WITH EVIDENCE OF NUTRITIONAL DEFICIENCY FEATURES

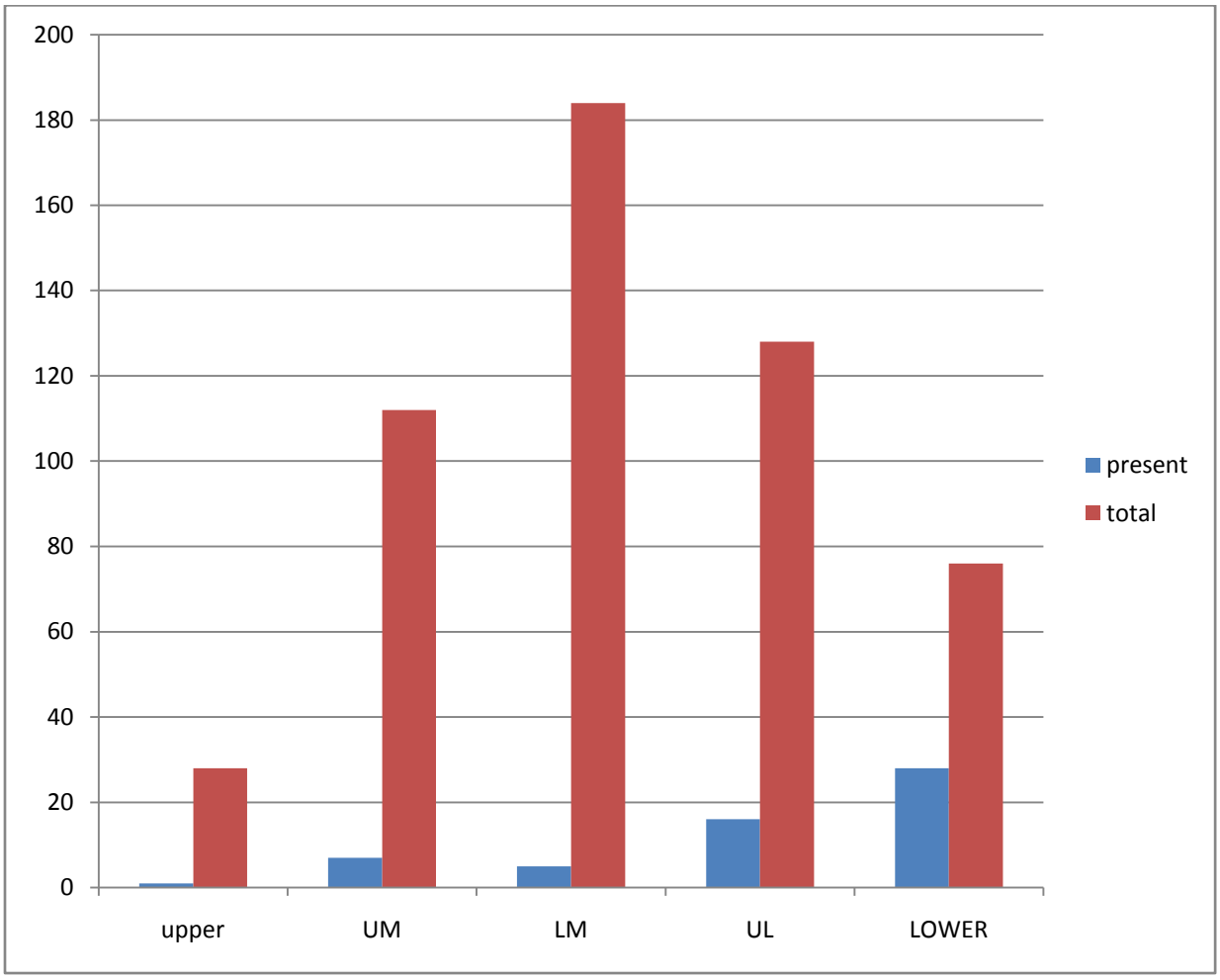


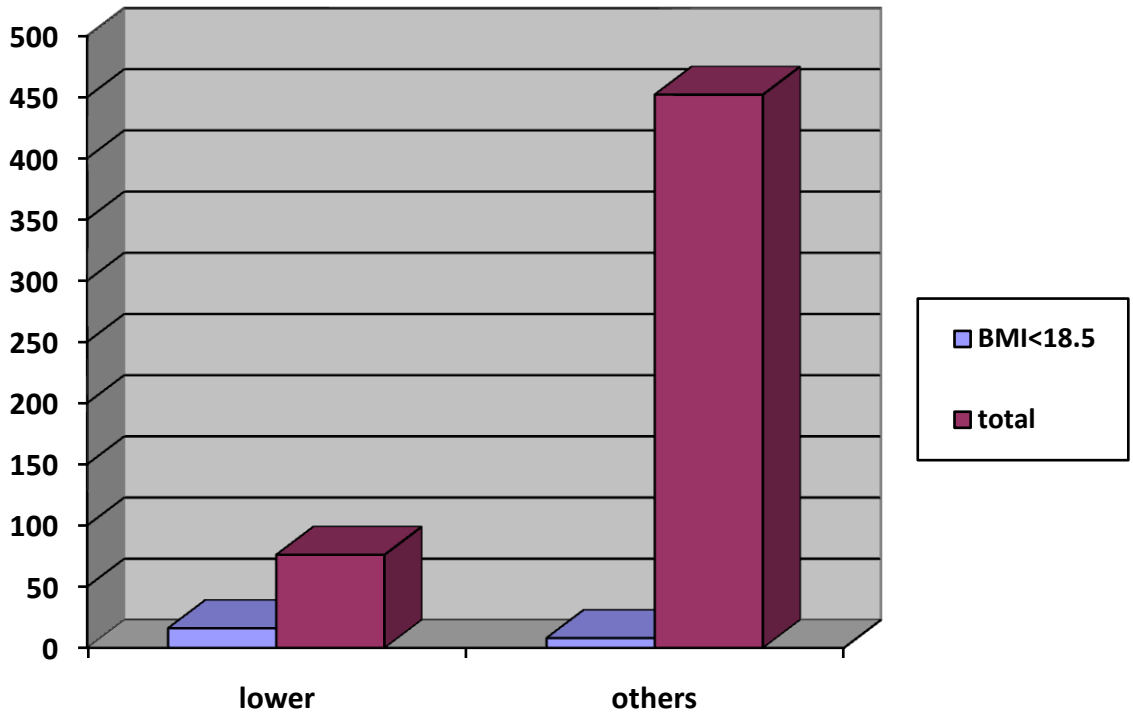
TABLE - XII (b)

SOCIOECONOMIC STATUS WITH BMI OF THE MOTHER

Socioeconomic status	BMI				Total
	18.5-24.9 Normal	25-29.9 Over Wt	30-34.9 Class I Obesity	Less than 18.5 Under Weight	
Upper	20	6	2	0	28
Upper Middle	95	11	5	1	112
Lower Middle	167	10	4	3	184
Upper Lower	118	3	3	4	128
Lower	56	2	2	16	76
Total	456	32	16	24	528

FIGURE -16

SES WITH BMI OF MOTHER.



	BMI<18.5	**TOTAL**
Lower	16 (21.05%)	76
Others	8 (1.76%)	452

When socioeconomic status of the family was correlated with the BMI of the mother out of 14.39 % in lower SES, 21.05 % of mothers had BMI below 18.5 denoting under weight. When this lower SES was compared with other SES only 1.76 % were below underweight BMI with gives a p value of 0.0001 by chi-square test which is statistically highly significant.

TABLE - XII(c)

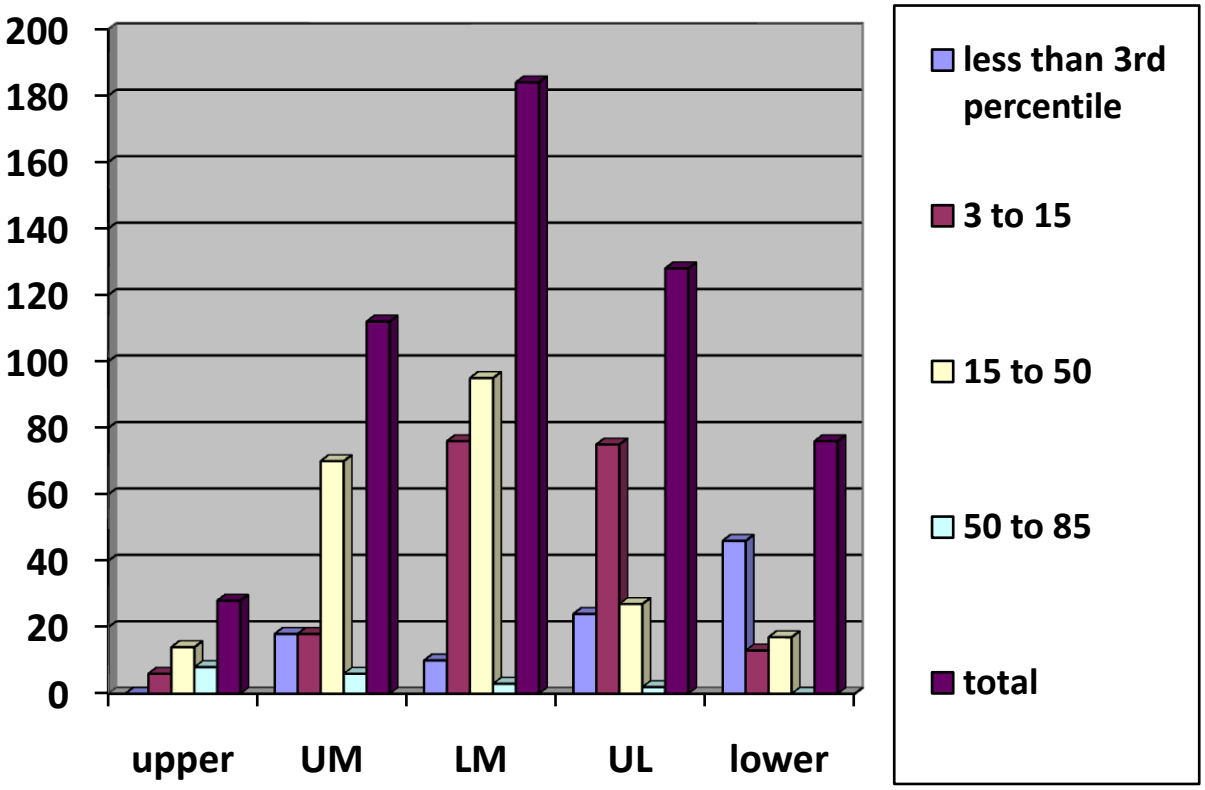
SOCIOECONOMIC STATUS WITH ANTHROPOMETRY

Socioeconomic status	Anthropometry of the child in Percentile				Total
	Less than 3	3-15	15-50	50-85	
Upper	0	6	14	8	28
Upper Middle	18	18	70	6	112
Lower Middle	10	76	95	3	184
Upper Lower	24	75	27	2	128
Lower	46	13	17	0	76
Total	98	188	223	19	528

When correlating SES of the family with Anthropometry of the child it was found that out of 5.30 % in higher SES 21.42 % were below 15th percentile when compared to 14.39 % in lower SES 77.63 % were below the 15th percentile with a p value of 0.01 by chi- square test showing that it is statistically significant.

FIGURE - 17

SES OF THE FAMILY WITH ANTHROPOMETRY OF THE BABY



CONSOLIDATION OF RESULTS OBTAINED

(B) ANALYSIS OF SOCIOECONOMIC FACTORS AND NUTRITIONAL STATUS OF MOTHER ON ANTHROPOMETRY OF THE BABY

Table XII (a)	SES with Nutritional deficiency features in mother	0.007	Highly Significant
Table XII (b)	SES with BMI of Mother	0.0001	Highly Significant
Table XII (c)	SES with Anthropometry of baby	0.01	Significant

OBLECTIVE -3

NUTRITIONAL OUTCOME OF THOSE BABIES WHO WERE EXCLUSIVELY BREASTFED WITH NONEXCLUSIVELY BREASTFED BABIES

CORRELATING EXCLUSIVE BREASTFEEDING PRACTICE WITH ANTHROPOMETRY OF BABIES LESS THAN 6 MONTNS

TABLE - XIII (a)

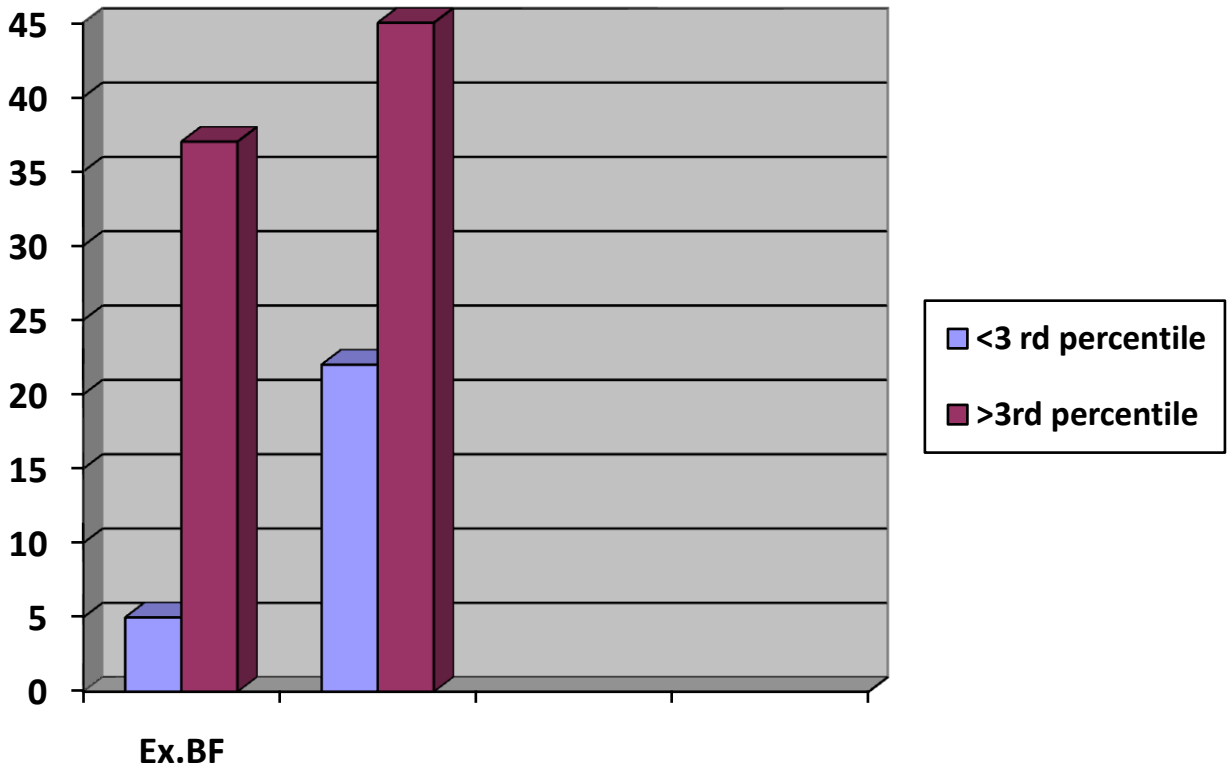
<6 mon	<3rd percentile	3-15 percentile	15-50 percentile	50-85 percentile	Total
Ex.BF	5 (11.90%)	11	24	4	42
Not.Ex.BF	22(32.83%)	15	27	1	67
Total	27	26	51	5	109

Out of 38.53 % of exclusively breastfed babies 11.90 % fall under < 3rd percentile when compared to 61.46 % of not exclusively breastfed babies where 32.83 % fall under < 3rd percentile with a p value of 0.021 which is statistically significant by Fisher's test.

FIGURE 18

ANTHROPOMETRY OF EXCLUSIVELY BREASTFED BABIES

LESS THAN 6 MONTHS



CORRELATING EXCLUSIVE BREASTFEEDING PRACTICE WITH ANTHROPOMETRY AMONG 7-12 MONTHS OLD BABIES

TABLE - XIII (b)

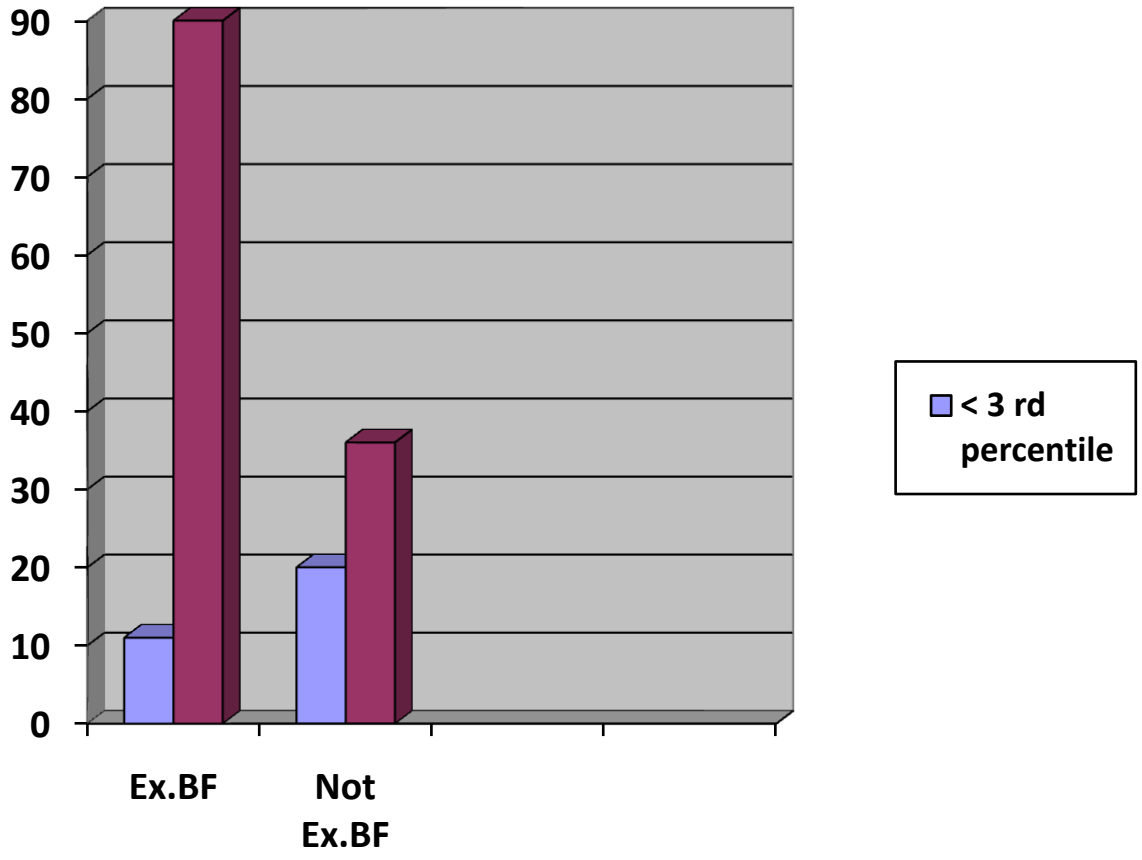
7-12 mon	<3rd percentile	3-15 percentile	15-50 percentile	50-85 percentile	Total
Ex.BF	3 (3.52 %)	6	68	8	85
Not.Ex.BF	13 (21.31%)	28	17	3	61
Total	16	34	85	11	146

Out of 58.21% of babies who were exclusively breastfed only 3.52 % of babies were below 3rd percentile as against 41.78 % of babies who were not exclusively breastfed where 21.31 % of babies fall under less than 3rd percentile with a p value of 0.0009 showing very high statistical significance by Fisher's test.

FIGURE - 19

ANTHROPOMETRY OF EXCLUSIVELY BREASTFED BABIES

BETWEEN 7 – 12 MON



CORRELATIN EXCLUSIVE BREASTFEEDING PRACTICE WITH ANTHROPOMETRY AMONG 13-18 MONTHS OLD BABIES

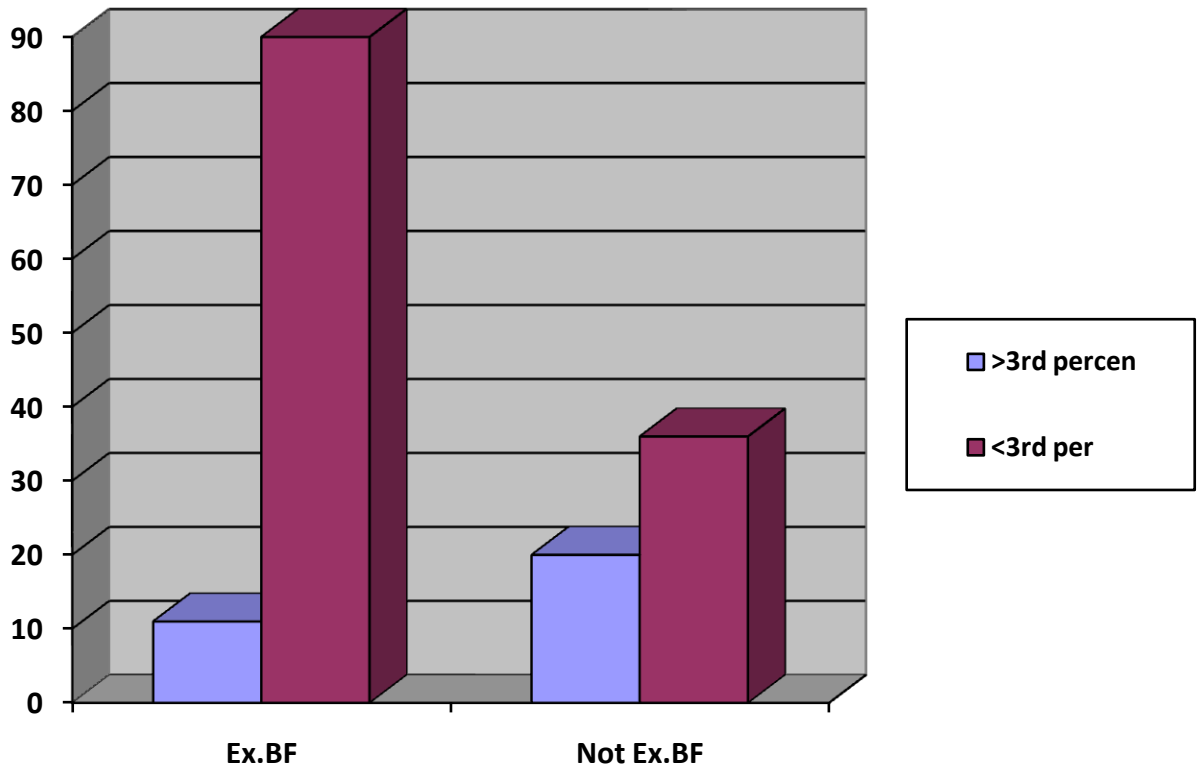
TBALE - XIII (c)

13-18 mon	**<3rd percentile**	**3-15 percentile**	**15-50 percentile**	**50-85 percentile**	**Total**
Ex.BF	11(10.89%)	48	40	2	101
Not.Ex.BF	20(35.71%)	22	13	1	56
Total	31	70	53	3	157

Out of 64.33 % of those babies who were exclusively breastfed 10.89 % of them fall under < 3rd percentile as against 35.71 % of those who were not exclusively breastfed with a p value of 0.0003 which is statistically highly significant by Fisher's test.

FIGURE - 20

ANTHROPOMETRY OF EXCLUSIVELY BREASTFED BABIES 13-18 MONTHS



CORRELATING EXCLUSIVE BREASTFEEDING PRACTICE WITH ANTHROPOMETRY AMONG 19-24 MONTHS OLD BABIES

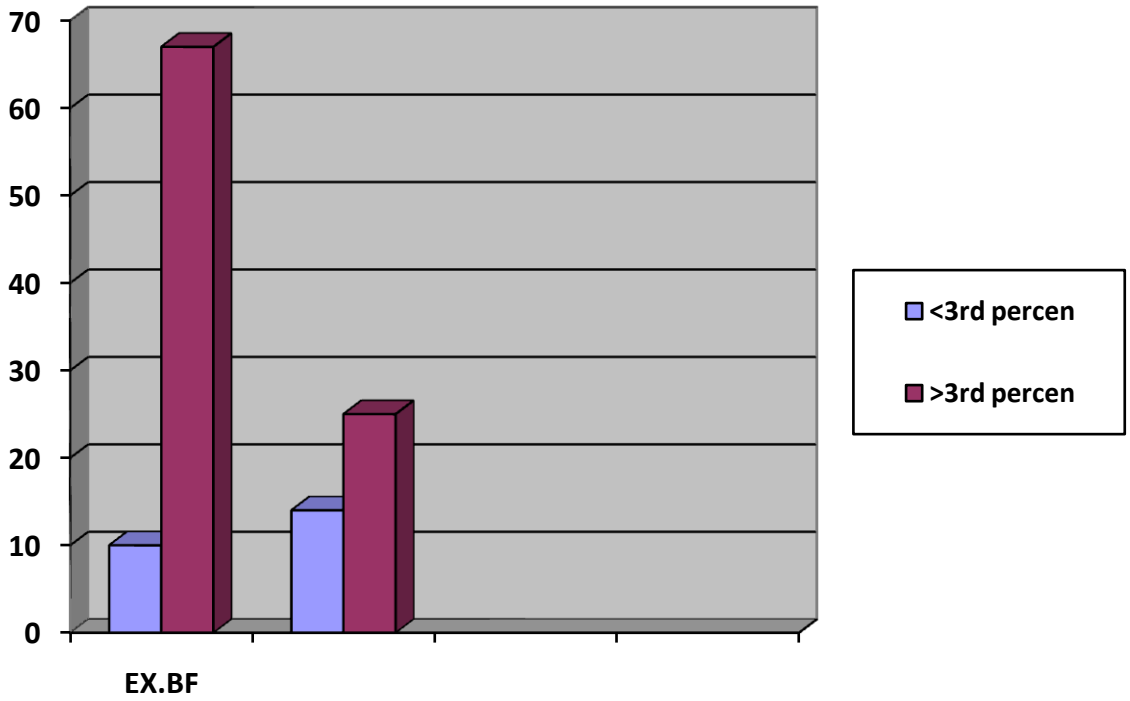
TABLE – XIII (d)

19-24 mon	<3rd percentile	3-15 percentile	15-50 percentile	50-85 percentile	Total
Ex.BF	10(12.98%)	40	27	0	77
Not.Ex.BF	14(35.89%)	18	7	0	39
Total	24	58	34	0	116

Out of 66.39 % of babies who were exclusively breastfed only 12.98 % of babies fall under < 3rd percentile when compared with those who were not exclusively breastfed were nearly 35.89 % of babies fall under 3rd percentile with a p value of 0.0068 which is statistically very significant by Fishre's test.

FIGURE - 21

ANTHROPOMETRY OF EXCLUSIVELY BREASTFED BABIES 19 - 24 MONTHS



CONSOLIDATION OF RESULTS OBTAINED

ANALYSIS OF NUTRITIONAL OUTCOME OF THOSE BABIES WHO WERE EXCLUSIVELY BREASTFED WHEN COMPARED TO THOSE WHO WERE NOT EXCLUSIVELY BREASTFED BY MEANS OF ANTHROPOMETRY OF THE BABY

OUTCOME OF EXCLUSIVELY BREASTFED BABIES

Table XIII (a)	< 6 months	0.021	Significant
Table XIII (b)	6 mon -12 mon	0.0009	Highly Significant
Table XIII (c)	13mon-18 mon	0.0003	Highly Significant
Table XIII (d)	19mon-24 mon	0.0068	Highly Significant

7. DISCUSSION

From this study it was found that, there is a marked correlation with level of education with period of exclusive breastfeeding. But however education did not have any significance with administration of colustrum and initiation of breastfeeding in contrast to a study done by Devang Raval at Gujarat. In this study women with education upto the level of higher secondary school had higher rates of exclusive breastfeeding but however increased level of education beyond college level was found to have negative correlation with period of exclusive breastfeeding.

A similar finding of inverse relation with education and duration of exclusive breastfeeding was found by Rama ram et al and Kar et al in their study at rural Darjeeling. Similar result was also obtained by Sailaja S Patel in her study at Karnataka.

In this study when occupation was considered it did not have any significant relation with period of exclusive breastfeeding, but however in a study conducted at California relating SES which is an indirect marker of occupation and income, with initiation of breastfeeding, maternal income was found to affect breastfeeding in opposite direction since maternal

income is associated with employment which may detract from breastfeeding. Maternal employment has been shown to decrease breastfeeding in another study done by Fein and Roe since employment may be an obstacle because of time away from the baby. But in this study maternal employment did not have any relation with duration of breastfeeding.

In this study it was found that age at child birth had significant correlation with initiation and duration of breastfeeding. In this study, In fact mothers who were in age group between 19-23 yrs (33.50 %) were more likely to initiate breastfeeding in < 1 hr (61.01 %) but however elderly mother's more than 27 years (14.2 %) were more likely to breastfeed for longer duration of > 6 months when compared to young mothers which means that eventhough young mothers initiate early they do not exclusively breastfeed their babies. In this study it was also inferred that among primi mothers 60.77 % when compared to multiparous mother 35.71 % were more likely to breastfeed > 6 months but however multiparous women were the ones to initiate breastfeed in < 1 hr, 66.50 % as against 55.12 % in primiparous mother. This result is supported by a study conducted at Nigeria which states that age of the mother at child birth and

her parity appear to influence breastfeeding pattern. It is probable that over time mothers acquire experience and confidence in proper child care practices. This is also supported by a report that older mother probably know more about the benefits of breastfeeding and have more realistic outcome expectation. Previous breastfeeding experience is associated with longer duration of breastfeeding as demonstrated by Mclnnes et al., 2001 in his study. But this study result is in contradiction to another study conducted at Saudi Arabia which revealed that 80.60 % of multiparous mothers breastfed exclusively compared to 45.70 % of nulliparous mothers. Therefore it is likely that age at child birth and parity influences breastfeeding practices differently at various demographic sites and needs further studies.

Pregnancy desirability in this study was found to have no significant correlation with either initiation or period of exclusive breastfeeding. As pregnancy was desired in 97.72 % of our study subjects and it was accidental conception in a very minority of study subjects 2.3%, most of them have initiated breastfeeding in less than 1 hour and breastfed for a considerable period of time more than 6 months. In a study done at Nairobi, Kenya too it has been stated that the positive association between pregnancy

desirability and complementary feeding has been studied poorly and therefore needs further research in this association.

Number of antenatal visits did not have any significance with either initiation or period of exclusive breastfeeding, since 99.8 % of our study subjects had more than 3 antenatal visits and therefore did not make much significance at all. From this study it is also inferred that almost all mothers had accessible health care facility and all made use of it well. In a study done at Kasturba Hospital Sevagram during 1996-97 at Maharastra it was found that mothers who had regular antenatal checkup wanted to initiate breastfeeding early and were more knowledgeable about benefits of breastfeeding, administration of colustrum, avoiding prelacteal feeds and continuation of breastfeeding during maternal illness and child illness when compared to unbooked mothers who did not have regular antenatal checkup. In a study done at Srilanka by Agampodi et al, it was found that no. of antenatal visits have an positive impact on breastfeeding initiation and duration.

In this study it was found that sex of the baby did not have relation with initiation or duration of breast feeding. Probably this may be due to the patriarchal nature of Indian society which influences lactation practices. It

has been reported in a study by Rajesh K. Chudasama et al and Panna C.Patel et al at Surat, Gujarat that male babies were more likely to be initiated breastfeeding and to be fed longer too. In a study by Kumar S Nath and Reddaiah female babies were more likely to be stopped breastfeeding than male babies. However there is no evidence to support this gender preference in this study.

In this study the presence or absence of iron and nutritional deficiency features and BMI of the mother at time of interview had significant relation with initiation and period of exclusive breastfeeding. This has been supported by a study conducted at urban Karachi population which also found that poor nutritional status of mother is associated with high perinatal mortality and increased incidence of LBW babies.

In this study it was found that Lower SES people are more likely to defer administration of colustrum due to varied misconceptions. Similarly lower SES people are likely to delay initiating breastfeed (27.63 %) when compared to high SES (53.57 %) as revealed in this study. Lower SES mothers are more likely in a position to suffer from nutritional deficiency and therefore poor nutritional outcome in their babies too. This result is similar to a study conducted at Guetemala by Frojo et al., and

Rogers et al who showed that there is direct relationship between nutritional status of mother and nutritional status of baby. In this study too it is established that BMI of the mother which is the marker of nutritional status of the mother is directly related to nutritional status of the baby which is reflected in Anthropometry of the baby.

But however socioeconomic status was in no way related to duration of breastfeeding as evident in this study though mothers of lower SES had delay in initiating breastfeeding and many of them did not administer colustrum. This is in contradiction to a study done by Rama ram et al and Kar et al at Darjeeling. This result is similar to a study by Kumar S Nath and Malhotra R Noheria done at New Delhi.

8. CONCLUSION

This study was done to correlate the breastfeeding practices of mothers with nutritional status of the mother and the socioeconomic status of the family and the various demographic factors which influence breastfeeding practices ultimately to the nutritional outcome of the baby.

This study population comprised mothers in the age group 19 yrs to 31 yrs out of which 52.1 % were in the age group 24 to 26 yrs followed by young mothers in the age group 19 to 23 yrs who comprised 33.5 % and 14.39 % of mothers who were more than 27 yrs. Among these mothers 4 % were illiterate, 10 % have completed their primary schooling, 42.4% have completed high school, 21.4 % Hr. sec. schooling and 22.2 % have completed college level of education. Out of them only 7.95 % were working mothers and the remaining 92.04 % were home makers. Most of them nearly 97.72 % wanted pregnancy and it was only in a small proportion of subjects the pregnancy was accidental conception. Almost 99.8 % of them had more than 3 antenatal visits. In this study 86.36 % had normal BMI, 6.06 % were overweight, remaining 4.54 % were underweight and 3.03 % were obese. Most of the mothers 88.63 % did not have evidence of vitamin

deficiency. In this study 53.59 % of the mothers were primi mothers and the remaining were multiparous mothers .

The breastfeeding rate obtained in this study was 35.79 % at < 6 months and 57.76 % beyond 6 months of life. The percentage of mothers who ever breastfed at all is 6.43 %.The percentage of mothers who initiated breastfeeding in < 1 hr was 58.52 % in this study. When this is compared with the Nation's rate of initiation of breastfeeding in less than 1 hr which is 23.4 % which is far below the rate obtained in our study, but however the rate of breastfeeding beyond 6 months at Nation's level is 56.7 % which is almost close as to the result obtained in this study.

When this comparison was extended to the South East Asian countries to be more specific it is 24-26 % in Bangladesh, India and Pakistan and 75 % among Srilankans. This is best reflected in the Neonatal mortality rates as 40-50% in Bangladesh, India and Pakistan and only 11 % among Srilankans. The National Family Health Survey -3 published in 2006, said only 23.4 % of mothers initiate feeding in < 1 hr, 46.4 % practice exclusive breastfeeding at 6 months and 56.7 % breastfeed beyond 6 months along with other complementary foods.The conclusion is that the rate of initiation

of breastfeeding is higher than the nation's value and exclusive breastfeeding rate is almost equal to Nation's value which is appreciable.

Socioeconomic status has been considered as one of the most important factors affecting nutritional outcome of babies. In families of low SES there is increased incidence of maternal malnutrition, anaemia and inadequate antenatal care resulting in poor nutritional status of the baby. In a study conducted at Karachi the status of mothers nutrition and SES variables was found to have influence over the reproductive performance and outcome and the condition of the infant at birth. In this study population 34.84 % were in lower middle class status followed by 24.24 % in upper lower class family, 21.21 % in upper middle class and 14.39 % in lower class and lastly 5.30 % in upper class family. Reasons for association between SES and breastfeeding is complex. Differing aspects of SES may be associated with knowledge, attitudes experiences and beliefs leading a mother to a particular infant feeding choice. Educated mothers would search out information on the health aspects of infant feeding choices. Along with SES maternal health is one other important factor affecting nutritional status of the babies. Poor nutritional status of the infants reflects the social development of a population.

This study showed that maternal nutritional status and socioeconomic status remained positively associated with breastfeeding suggesting social policies affecting maternal nutrition and interventions to overall improve the better living of people which would have long lasting effect in nutritional outcome of babies.

The improvement in exclusive breastfeeding rate can be achieved by promoting breastfeeding as early as < 1 hr of birth which can reduce Infant Mortality Rate to 22 %. A January 2008 series on Infant Mortality & Malnutrition published in Lancet Medical Journal stated that 77 % of child death attributable to sub-optimal breastfeeding are due to nonexclusive breastfeeding during 0-6 months of life.

Appropriate information about breastfeeding is usually received from government facilities during antenatal and postnatal visits. Therefore the importance of providing correct information to mothers by medical and paramedical personnel about proper feeding of infants has been emphasized.

One of the noticeable factors that contributes to early introduction of breast milk substitutes and supplementation in developing countries is the general belief of the parents that breast milk is inadequate for the growth and

development and survival of the baby as obtained in this study and many other studies too. Growth retardation is usually an indication of malnutrition. Growth assessment is used to promote child health and survival world wide. Therefore the information obtained in this study can be used as a tool to counsel parents as well as to design interventions in order to motivate actions that will promote and support optimal breastfeeding practice and ultimately better outcome of babies.

9. LIMITATIONS

Nutritional status of mother was assessed by taking into account the biometric variables like height and weight and it was computed to BMI. Clinical evidence for iron and vitamin deficiency features were used as a supplement to nutritional status assessment.

Dietary assessment and biochemical data were not taken into account, since there is lack of nationally representative data on dietary intake and laboratory values of lactating women.

Regarding SES assessment we did not have information on past SES or area level Socioeconomic status factors. Thus we cannot rule out additional unmeasured effects of SES on breastfeeding.

In assessing the anthropometry of the child although one measurement plotted on a growth chart can be used to screen children for nutritional risk, it does not provide adequate information to determine the child's growth pattern. When plotted correctly, a series of accurate weights and measurements of stature or length offer important information about a child's growth pattern, which is also influenced by many factors as gestational age, birth weight, and parental stature. Hence one time measurement in this study have not accurately determined the nutritional status of those children.

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ANNEXURE 1

QUESTIONNAIRE

PROFORMA

I ---------- understand that that I am being requested to participate in this study which is all about various demographic factors which influence breastfeeding practices and finally its correlation to nutritional status of mine and SES of my family with nutritional outcome of my baby.I agree to participate in this study. I realise that the knowledge gained through this study may help me and other mothers and infants for better outcome in future.

BREASTFEEDING PRACTICIES IN MOTHER'S OF CHILDREN LESS THAN 2 YEARS IN SUBURBAN ANGANWADIS OF TRICHY CITY AND ITS CORRELATION TO NUTRITIONAL STATUS OF MOTHER AND SOCIOECONOMIC STATUS OF THE FAMILY.

PROFORMA.

1. Name of the child	:	
2. Age	:	
3. Sex	:	Male\Female
Religion	:	Hindu/ Muslim/Christian
4. Anthropometry of children	:	
		a) Height / length
		b) Weight
		c) Head circumference
		d) Chest circumference

		e) Mid arm circumference
		e) Evidence of Vit. Deficiency
5. Mother's Name\Age	:	
6. Educational status of mother	:	a) Illiterate
		b) Primary school
		c) High school
		d) Higher secondary school
		e) College
7. Occupation of mother	:	working \ Not working
8. Marital status of mother	:	a) Married & union
		b) Married & not in union
		c) Unmarried
9. Age at marriage	:	
10.Child's Father Name	:	
11.Occupation of father	:	
12.Type of family	:	Nuclear\Joint
13. Age at conception	:	
14. Pregnancy desirability	:	a) Wanted
		b) Wanted later
		c) Never wanted
15. Birth order	:	
16. Number of antenatal checkup	:	a) None
		b) One
		c) > Three
17. Accessibility to health facility	:	Yes \ No

18.Intake of Iron and folic acid tablets antenataly : Taken\Not taken

19.Iron and folic acid tablets continuing postnatally : Yes\No

20.Blood transfusion if any : Yes\No

21.Complications in AN period : Yes\No

22.Weight gain during AN period :

23.Present weight \ Height :

24.Pallor : Present\Absent.

25.Evidence of vit.defiency : Present\Absent.

26.Prior knowledge about breastfeeding in antenatal period: Present\Absent

If yes source of knowledge-

27. Place of birth : a) Home
b) Hospital \ Health facility

28. Mode of birth : a) Labour natural
b) Caesarean

29. Size of baby : a) Small
b) Large
c) Normal

30. Birth weight if know n :

31.Maturity of baby :

32. Breast fed within : 4) < 1 hour
3) 1 hour -1 day
2) > 1 day
1) Not initiated at all

33. Breast feeding not initiate at all : Yes / No

34. Reasons for not initiated breast feeding:

a) Mother had no milk
b) Mother had little milk
c) Baby asleep
d) Baby was sick
e) Mother was sick
f) LSCS delivery
g) Flat nipple
h) Misconception-colustrum not to be given
i) Extreme prematurity
j) Mastitis / Breast abscess

35. Colustrum feeding : Given\ Not given

36. Prelacteal feeds : Given\ Not given

37. Period of exclusive BF :

38. Reasons for stopping BF :

39. Age at introduction of complementary feeds :

40. Complementary feeds used :
a) Plain water
b)Porride
c) Fresh milk
d) Powdered milk
e) Sweetened water

41. Age at introduction of weaning foods :

42. Bottle feeding : Used \ Not used

43. If not breastfed other feeds given : Formula feeds\ Cow's milk

44. Reason for hospitalization in the past :

45. Immunization status :

46. Grading of socio economic class : KUPPUSAMY'S GRADING

Upper		I	26 – 29
Middle	Upper middle	II	16 – 25
	Lower middle	III	11 – 15
Lower	Upper lower	IV	5 - 10
	Lower lower	V	< 5

ANNEXURE 2

SOCIOECONOMIC STATUS SCALE

UPDATED KUPPUSWAMY 'S SCALE FOR SOCIOECONOMIC STATUS SCALE – 2007

A) EDUCATION	SCORES
1. Profession or honors	7
2. Graduate or postgraduate	6
3. Intermediate or post-high school	5
4. High school certificate	4
5. Middle school certificate	3
6. Primary school certificate	2
7. Illiterate	1

B) OCCUPATION	SCORES
1. Profession	10
2. Semi-profession	6
3. Clerical,shop-owner,farmer	5
4. Skilled worker	4
5. Semi-skilled worker	3
6. Unskilled worker	2
7. Unemployed	

C)FAMILY INCOME PER MONTH (IN RS) – ORIGINAL | MODIFIED FOR 2007 | SCORE

1. 2000	> 19575	12
2.1000-1999	9788-19574	10
3.750-999	7323-9787	6
4.500-749	4894-7322	4
5.300-499	2936-4893	3
6.101-299	980-1935	2
7.<100	<979	1

TOTAL SCORE	**SOCIOECONOMIC STATUS**
26-29	Upper (I)
16-25	Upper middle (II)
11-15	Lower middle (III)
5-10	Upper lower (IV)
< 5	Lower (V)

WORK PATTERN

EXAMPLES OF UNSKILLED,SEMISKILLED AND SKILLED WORK:

UNSKILLED WORK:

- Least complex type of work.
- Unskilled jobs are usually learnt in 30 days or less
- Examples:

  Clerk \ typist

Hand packer

Circuit board assembler

Restaurant dishwasher

SEMI-SKILLED WORK:

- More complex than unskilled work
- Simpler than the more skilled type of works.
- They require more variables and more judgement than do unskilled occupations.
- Semiskilled occupations require more than 30 days to learn
- Close attention must be paid to the actual complexities of the job dealing with data ,people, or objects and to the judgements required to do the work.

EXAMPLES:

Carpenter

Nurse ‘s aide

Administrative Assistant

Room service waiter

SKILLED WORK:

- Skilled occupations are more complex and varied than unskilled and semiskilled occupations.
- They require more training and often a higher educational level.

EXAMPLES:

Chemists

Architechts

Physicians

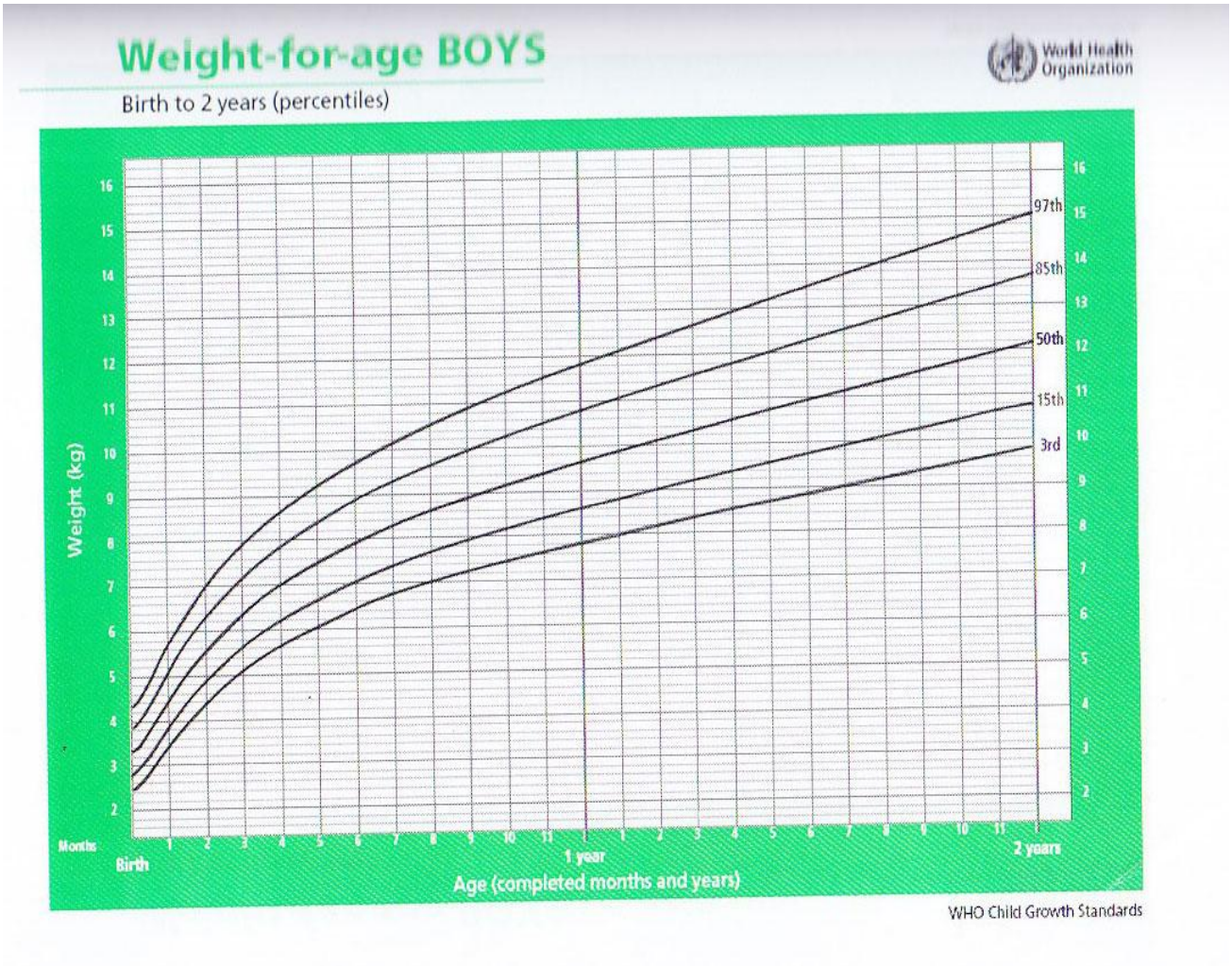
Attorneys

CEO of a business

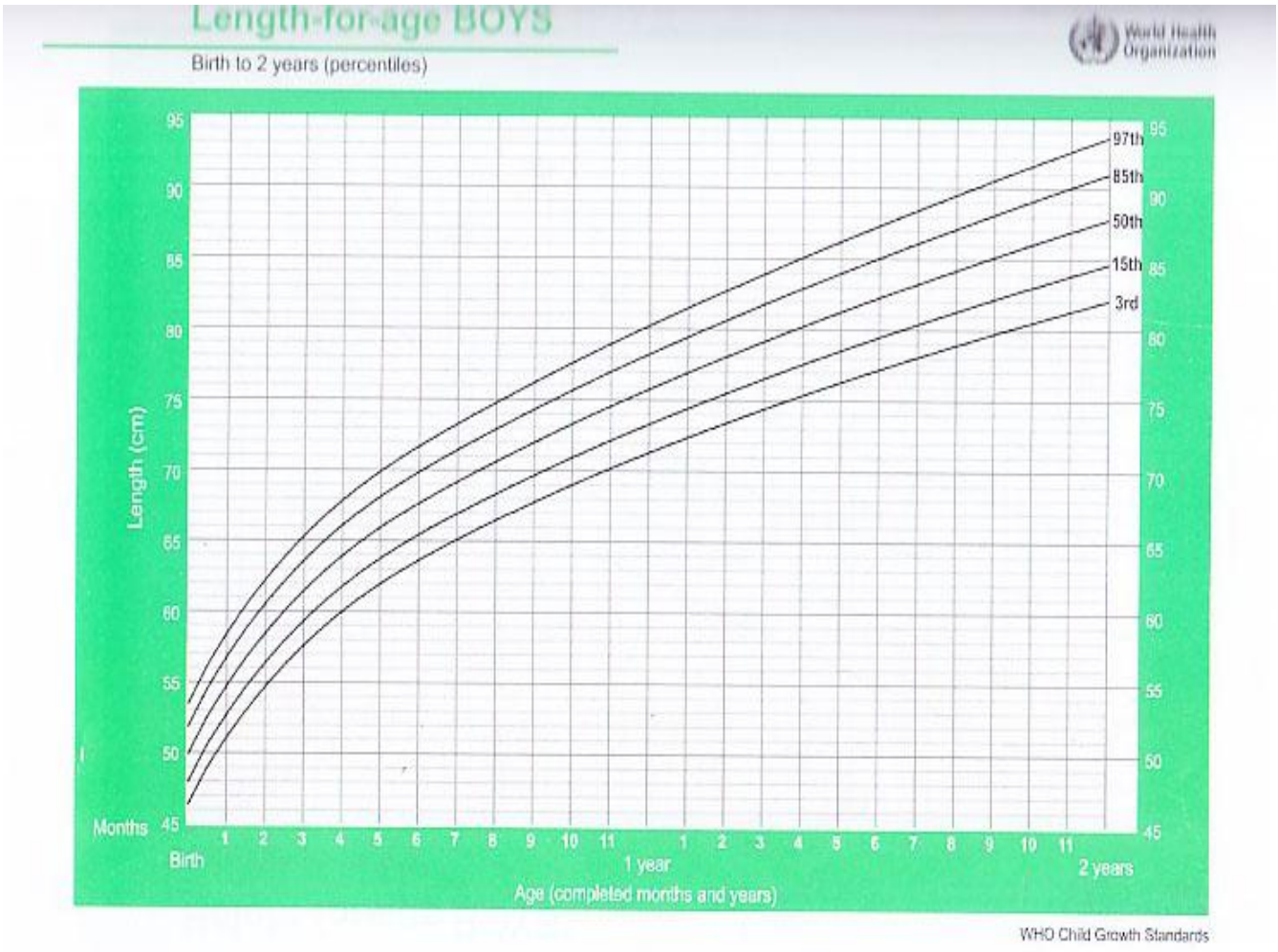
ANNEXURE 3

WHO GROWTH CHARTS

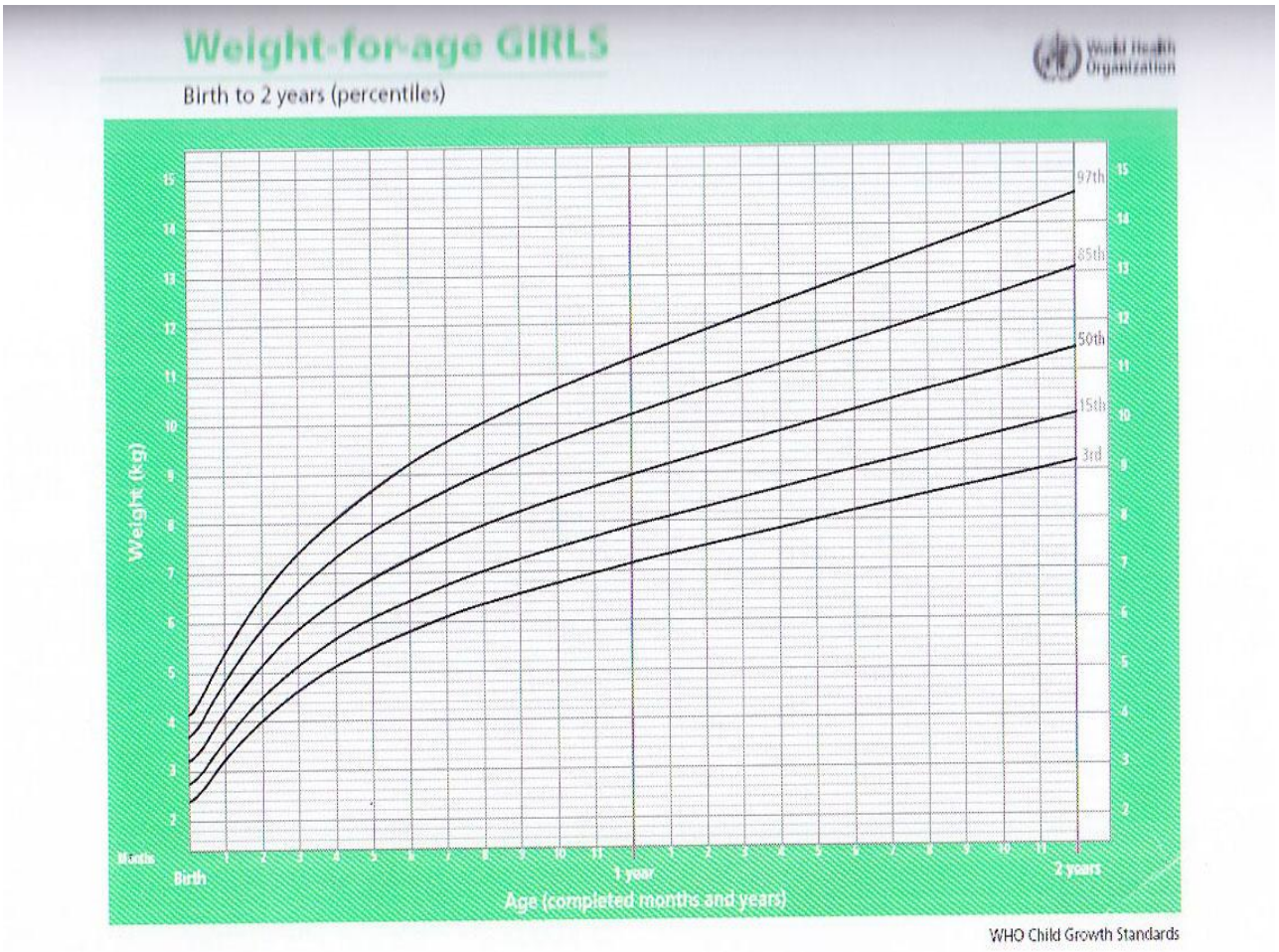
1. WEIGHT FOR AGE FOR BOYS : BIRTH TO 2 YRS



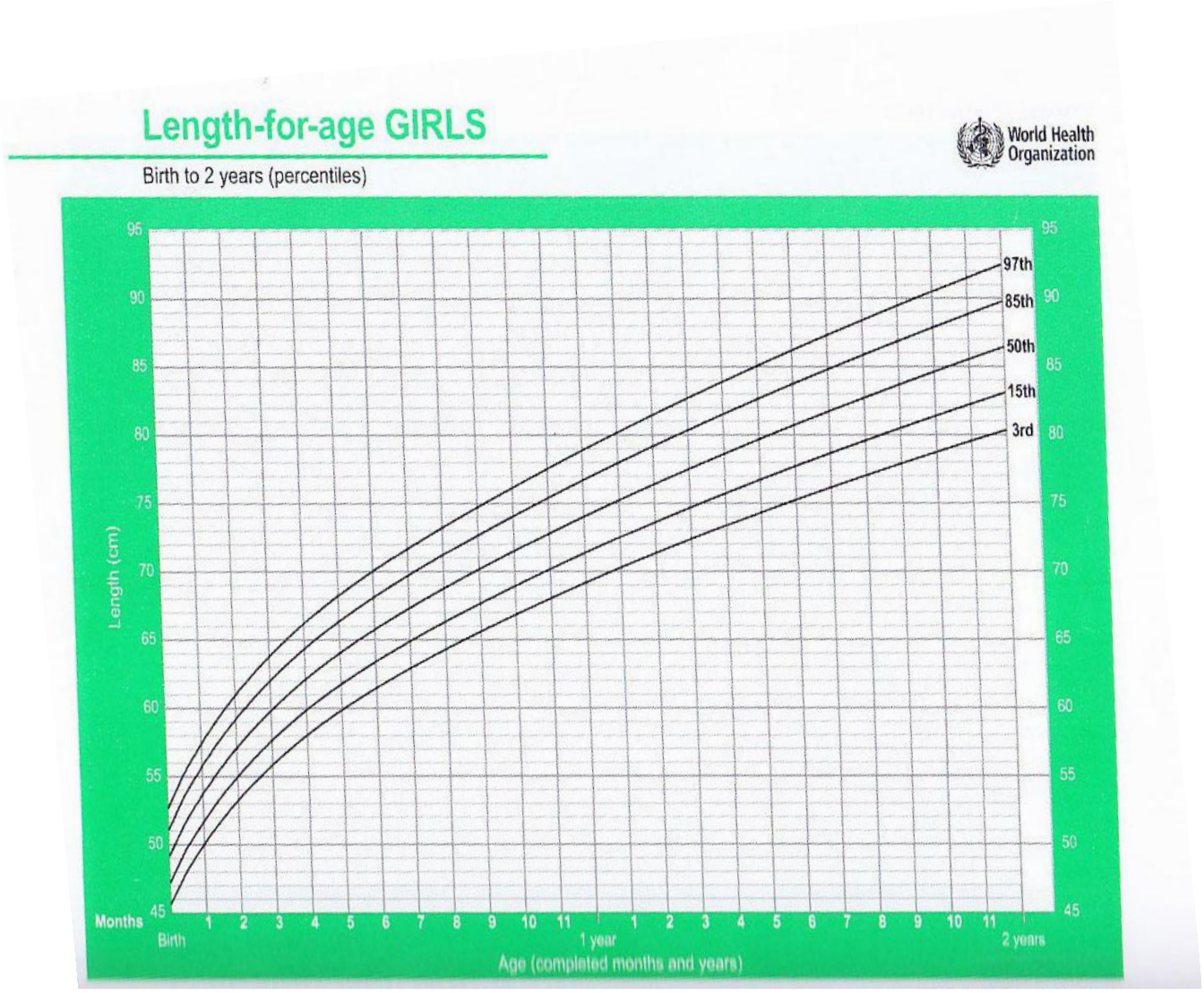
2. LENGTH FOR AGE FOR BOYS



3. WEIGHT FOR AGE FOR GIRLS



4. LENGTH FOR AGE FOR GIRLS.



ANNEXURE 5

KEY TO MASTER CHART

S.NO: SERIAL NUMBER

Details of mother

Education

1. Illiterate
2. Primary school
3. High school
4. Higher secondary
5. College

Occupation

1. Working
2. Not Working

Age at child birth

1. 19-23 years
2. 24-26 years
3. 27-31 years

Pregnancy desirability

1. Wanted
2. Accidental conception

No.of antenatal visits

1. None
2. One

3. ≥three

Antenatal iron tablets

1. Taken
2. Not taken

Iron Injection

1. Yes
2. No

Blood transfusion

1. Yes
2. No

Weight Gain

1. Less than 10 kg
2. More than 10kg

BMI

1. 18.5-24.9 (Normal)
2. 25-29.9 (over weight)
3. 30-34.9(Class I Obesity)
4. 35-39.9(Class II Obesity)
5. ≥40 (class III Obesity)
6. <18.5 (Under weight)

Evidence of vitamin deficiency

1. Present
2. Absent

DETAILS OF THE BABY

Age:

1. 0-3 months
2. 4-6 months
3. 7-12 months
4. 13-18 months
5. 19-24 months

Sex

1. Boy
2. Girl

Birth order

1. First
2. Second
3. >two

Time of initiation of breastfeeding

1. <1 hour
2. hour – 1 day
3. .> 1 day
4. Not initiated at all

Colustrum

1. Given
2. Not given

Period of exclusive Breast feeding

1.Not initiated at all

2.<6 months

3.>6 months

Bottle feeding

1. Used
2. Not used

REASON FOR STOPPING BREAST FEEDING

1. Mother had no milk

2. Baby was sick

3. Inadequate milk secretion

4. knowledge about weaning

5. Misconceptions

-To decrease frequency of micturition

-child does mischief

-child has grown up

-child started walking

-mother had fever

-inadequate weight gain

-mother had viral exanthematous illness

-mother underwent surgery

-mother had wheezing attack

-eruption of tooth

-delayed walking of baby

-child had diarrhoeal attack

-mother is anaemic so less breast milk

6. Next conception

7. Working \Studying mother

8. Baby refused to suck at breast

SOCIO ECONOMIC STATUS

Modified Kuppusamy Scale

I. Upper

II. Upper Middle

III. Lower Middle

I V. Upper lower

V. Lower

Anthropometry –weight for age –WHO growth charts

6.>97 th percentile

5.85 – 97 th percentile

4.50 -85 th percentile

3.15 – 50 th percentile

2.3 – 15 th percentile

1.< 3 rd percentile

ANNEXURE 6

BABY FRIENDLY HOSPITAL INITIATIVE

TEN STEPS TO SUCCESSFUL BREASTFEEDING

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within half an hour of birth.
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless medically indicated.
7. Practice rooming-in - that is, allow mothers and infants to remain together -24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

ANNEXURE -4

MASTER CHART

s. no	Details of mother											Details of Baby									
	Education	Occupation	Age at child birth	Pregnancy diserability	No .of AN visit	AN intake of IFA tablets	AN Iron Injection	Blood Transfusion	WT. Gain in AN period	BMI	Evidence Of Vit Def	Age	sex	Birth order	Time of initiation of breast feeding	Colostrum	Period of exclusive breast feeding	Bottle feeding	Reason For Stopping Breast feeding	Anthropometry	Socioeconomic status scale
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1 0	3	2	2	1	3	1	2	2	1	1	2	2	2	1	2	1	3	2	5	3	IV
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501	5	2	3	1	3	1	2	2	2	1	2	3	2	1	3	2	2	2	3	3	V
502	3	2	2	1	3	1	2	2	2	1	2	1	1	1	4	2	2	2	7	1	II
503	3	2	1	1	3	1	2	2	1	1	2	2	1	2	4	2	2	2	1	2	II
504	5	1	3	1	3	1	2	2	1	1	2	2	2	2	4	2	2	1	8	3	IV
505	4	2	3	1	3	1	2	2	2	1	2	4	1	1	4	2	3	2	7	3	III
506	3	2	2	1	3	1	2	2	2	1	2	3	1	1	3	2	3	2	5	3	II
507	3	2	1	1	3	1	2	2	1	1	2	2	1	2	4	2	2	2	1	2	V
508	3	2	2	1	3	1	2	2	1	1	2	4	2	1	4	2	3	1	1	3	IV
509	3	2	1	1	3	1	2	2	2	1	2	1	2	2	3	1	1	1	1	3	II
510	3	2	2	1	3	1	2	2	2	1	2	3	2	2	4	2	2	1	1	2	V
511	3	2	2	1	3	1	2	2	1	1	1	4	2	1	1	1	1	1	2	2	II
512	4	2	3	1	3	1	2	2	2	1	2	4	1	1	4	2	3	2	5	2	IV
513	3	2	2	1	3	1	2	2	1	1	2	4	2	1	4	2	3	1	6	2	V

514	3	2	1	1	3	1	2	2	2	1	2	2	2	1	3	2	2	1	1	3	V
515	5	1	2	1	3	1	1	2	1	1	1	4	2	1	4	2	2	1	8	2	IV
516	3	1	2	1	3	1	1	1	1	1	2	5	2	2	4	2	3	2	1	2	IV
517	3	2	2	1	3	1	2	2	2	1	2	3	2	1	1	1	1	1	1	3	II
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520	3	2	1	1	3	1	2	2	1	1	2	2	1	2	4	2	2	2	7	1	IV
521	3	2	1	1	3	1	2	2	2	1	2	1	2	1	4	2	2	1	7	2	V
522	4	2	2	1	3	1	2	2	2	6	2	4	1	2	4	2	3	1	1	1	II
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526	5	1	2	1	3	1	1	2	1	1	1	4	2	1	4	2	2	1	8	2	V
527	3	2	2	1	3	1	2	2	1	1	2	4	2	1	4	2	3	1	6	2	V
528	5	2	2	1	3	1	2	2	2	3	2	5	1	1	2	2	2	2	4	3	II